DAREX

WORLD'S BEST SELLING INDUSTRIAL DRILL SHARPENERS

XPS16

CNC DRILL SHARPENER

OPERATOR'S MANUAL

BEFORE USE, ENSURE EVERYONE USING THIS MACHINE READS AND UNDERSTANDS ALL SAFETY AND OPERATING INSTRUCTIONS IN THIS MANUAL .

Serial #.....

Date of Purchase.....

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*For Technical Service visit our web site at http://www.darex.com
Or call Darex Corporation 800-547-0222

PP12850KF - User Manual
PP12854KF - Technicians Manual

Revised 06-25-03

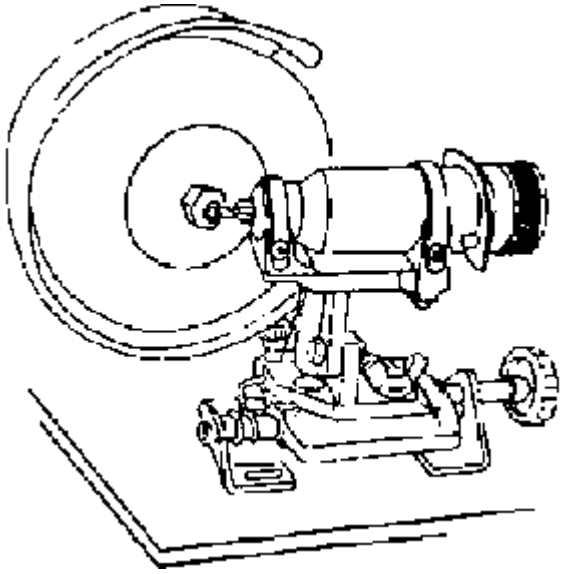
The Darex Story

Darex Corporation began in 1973 in Beecher, Illinois. The D, A and R of Darex are the initials of three generations of the Bernard family; David, Arthur and Richard Bernard. David and his father Richard founded Darex. Grandfather Arthur Bernard, who earlier founded the Bernard Welding Company, contributed his energy and guidance to Darex. Art's inventions revolutionized the welding industry.

In 1978, Darex relocated to Ashland, Oregon. Grandson Dave and son Dick carry on Arthur's legacy of inventiveness. Darex grew to become the most recognized name in the cutting tool sharpening industry. Today, Darex is a world-leading manufacturer of precision cutting tool sharpeners.

Darex is proud to offer a complete line of quality precision cutting tool sharpeners at affordable prices. Before our first days, we at Darex had looked at our competitor's sharpeners and asked ourselves: "Must cutting tool sharpeners be complicated? Why must the choice be limited to cost prohibitive accuracy or low price inaccuracy?" Our sharpeners prove you can have it all: Simplicity, Accuracy, and Affordability.

We have always emphasized innovative product design and tested technology. The experienced personnel at our modern manufacturing facility use the latest production methods. The Darex marketing team knows first-hand the machines we sell and will guide you to the best machine for your needs. Our skilled technical service department is happy to answer your questions about our products or cutting tools.



Darex's M-3

The XPS-16 CNC Sharpener

The Darex XPS-16 CNC Drill Sharpener can be programmed to sharpen an infinite variety of conical, four-facet, split-point and/or radius split point drills. The XPS-16 can sharpen HSS and carbide twist drills from 1/8" to 5/8" (3-16 mm) diameter, 2" to 8 ¾" long, and angles of 118 to 150 degrees. Memory stores user-defined drill point geometries. In a single set-up the Darex XPS-16 automatically sizes, aligns, then sharpens the drill and splits the point and can hone the drill's cutting edges to minimize chipping. Benefits include: Convenient internal chuck holds drill; LCD screen display panel for one-touch programming; Long-lasting super-abrasive plated grinding wheels; "Grind Motion Control" monitors load on the grinding wheel; adjusts feed and speeds keeping drills cool, diagnostic software alerts operators of potential problems.

To keep your Darex XPS-16 in top condition, please refer to the maintenance section of this manual. Replacement wheels and parts are listed in the parts list on page 69. A schematic breakdown of the machine is on page 71 of the manual.

Safety Instructions

FOR YOUR OWN SAFETY, READ INSTRUCTION MANUAL BEFORE OPERATING MACHINE!

Caution:

- DO NOT OPERATE MACHINE WITHOUT VACUUM SYSTEM RUNNING
- Airflow from vacuum cools grinding motor
- Grinding dust inhaled/ingested can be harmful to your health
- Grinding partials will cause damage to the internal components

Caution:

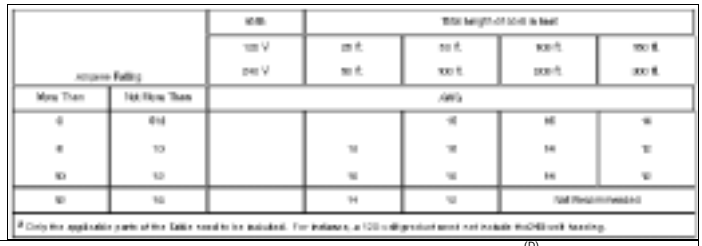
WHEN USING ELECTRIC TOOLS, BASIC SAFETY PRECAUTIONS SHOULD ALWAYS BE FOLLOWED TO PREVENT THE RISK OF FIRE, ELECTRIC SHOCK AND PERSONAL INJURY, INCLUDING THE FOLLOWING:

- **WHEN MAINTENANCE IS PERFORMED ON SHARPENER ALWAYS:** Push the emergency stop button, unplug unit from power supply and use a "LOCK OUT" "TAG OUT" procedure.
- **Follow instructions entitled "DAREX XPS-16 Maintenance"** in this Instruction Manual.
- **Never touch internal parts of the sharpener when the sharpener is on.** The rotating grinding wheel can cause injury.
- **Use caution when replacing the grinding wheel.** Follow instructions entitled "Replacing The Grinding Wheel", in this Instruction Manual.
- **KEEP GUARDS IN PLACE** and in working order.
- **REMOVE WRENCHES** Always check to see that any tools have been removed from the sharpener before turning it on.
- **KEEP WORK AREA CLEAN** Cluttered areas and benches invite accidents.
- **DON'T USE IN DANGEROUS ENVIRONMENT** Do not use power tools in damp or wet locations, or expose them to rain.
- **STORE EQUIPMENT** in a safe place when not in use.
- **DON'T FORCE TOOL** It will do the job better and safer at the rate for which it was designed.
- **USE THE RIGHT TOOL** Don't force tool or attachment to do a job it was not designed for.
- **ALWAYS USE SAFETY GLASSES** Also use face or dust mask if cutting operation is dusty. Everyday eyeglasses only have impact resistance lenses and they are **NOT** safety glasses.
- **MAINTAIN TOOL WITH CARE** Keep tools sharp and clean for best and safest performance.
- **DISCONNECT TOOLS** from the power supply before service.
- **AVOID ACCIDENTAL STARTING** Make sure switch is in the "OFF" position before plugging cord in to outlet or machine.
- **USE RECOMMENDED ACCESSORIES** Consult the owner's manual for recommended accessories. The use of improper accessories may cause hazards.
- **CHECK FOR DAMAGED PARTS** Before further use of the tool, a guard or other part that is damaged should be carefully checked to assure that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced.
- **NEVER LEAVE TOOL RUNNING UNATTENDED** Turn power off.
- **USE PROPER EXTENSION CORD** Make sure extension cord is in good condition. When using an extension cord be sure to use one heavy enough to carry the current the Drill Sharpener will draw. An undersize cord will cause a drop in line voltage, resulting in a loss of power and/or overheating.
- **DO NOT USE DAMAGED OR UNSHAPED WHEELS** Use grinding wheels suitable for speed of grinder
- **THE CONTINUOUS A-WEIGHTED** sound pressure level at the operator's ear is not over 60dB (A)
- **RISK OF INJURY DUE TO ACCIDENTAL STARTING.** Do not use in an area where children may be present.
- **THE WEIGHTED ROOT MEAN SQUARE ACCELERATION VALUE** to which the arms are subjected to does not exceed 2.5 m/s2

GROUNDING INSTRUCTIONS

- **For all grounded, cord connected tools:**
- In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This tool is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into a matching outlet that is properly installed and grounded in accordance with all local codes and ordinances. Do not modify the plug provided- if it will not fit the outlet, have the proper outlet installed by a qualified electrician. Improper connection of the equipment-grounding conductor can result in a risk of electric shock. The conductor with insulation, having an outer surface that is green with or without yellow stripes, is the equipment-grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal. Check with a qualified electrician or serviceman if the grounding instructions are not completely understood, or if in doubt as to whether the tool is properly grounded. Use only 3-wire extension cords that have 3-prong grounding plugs and 3-pole receptacles that accept the tool's plug. Repair or replace damaged or worn cord immediately. See Table 1. Minimum Gauge Cords below.
- **Grounded, cord-connected tools intended for use on a supply circuit having a nominal rating less than 150 volts:** This tool is intended for use on a circuit that has an outlet that looks like the one illustrated in Figure A. The tool has a grounding plug that looks like the plug illustrated in Figure A. A temporary adapter which looks like the adapter illustrated in Figures B and C, may be used (except in Canada) to connect this plug to a 2-pole receptacle as shown in Figure B if a properly grounded outlet is not available. The temporary adapter should be used only until a qualified electrician can install a properly grounded outlet. The green colored rigid ear lug, etc. extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box. See Fig. 1. Grounding methods below.
- **Grounded cord-connected tools intended for use on a supply circuit having a nominal rating between 150-250 volts inclusive:** See Table 1. Minimum Gauge Cords below.

Table 1 Minimum Gauge Cords



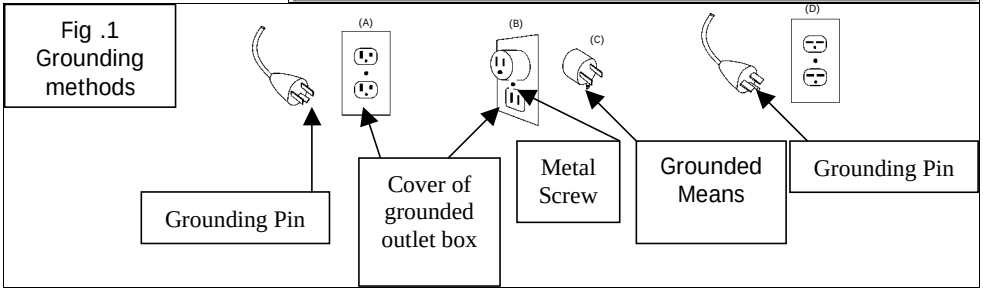


Fig .1 Grounding methods

CAUTION

Do not operate machine without using vacuum system

- Grinding dust inhaled/ingested can be harmful to your health
- Grinding particles can cause damage or erratic operation of the sharpener
- Airflow from vacuum cools the grinding wheel & motor during sharpening

Do not alter length of vacuum hose

Remove wheel before cleaning

Do not operate machine in adverse environmental conditions

- Minimum 7°C (45°F) Maximum 32°C (90°F)

Do not remove jaws from springs OR springs from spindle insert

- Jaws are positioned and then match ground. By disassembling you may compromise the concentricity. Refer to information on page 43

Do not interrupt or shut down sharpening machine while in the lube cycle

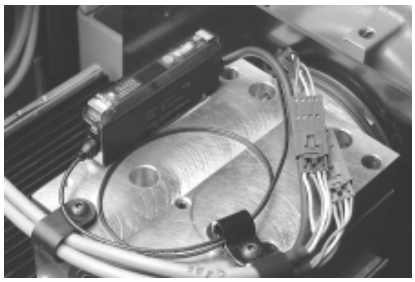
- Remove drill from chuck before pressing the Check icon to continue lube process

Do not interrupt or shut down sharpening machine while downloading software

Use a Diamond wheel to grind carbide drills

- Grinding carbide on a CBN wheel will cause damage to the wheel

Use grounding straps and static dissipating materials when handling electronics



Do not pinch, bend or crimp the Fiber optic cable

- The cable can be found underneath the left side of the top cover, fastened to the top of the spindle cartridge block

Do not over tighten chuck when securing drill

- May cause chuck to lock up

Do not replace interior lamp with substitute bulb

- Damage or erratic operation could result.

Material Safety Data Sheet

US DEPARTMENT OF LABOR — Form Approved Occupational Safety and Health Administration — 0MB No 44-Ri 367

MATERIAL SAFETY DATA SHEET

Required under USDL Safety & Health Regulations for Ship Repairing, Shipbuilding and Chip breaking
129 CFR 1915, 1916.19171

SECTION I

MANUFACTURERS NAME: Darex Industrial Corporation
EMERGENCY PHONE NO: (541) 488-2224
ADDRESS: 280 E. Hersey Street, Building C Ashland, Oregon 97520
CHEMICAL NAME & SYNONYMS Diazon-Electroplated Diamond/CBN Products, Diamond (uncoated)
Man-Made Diamond. RVG. MBG. MBS Product Families. Standard Series and 300 Series Diamond Micron Powder
TRADE NAME & SYNONYMS: Electroplated CBN Wheels, Electroplated Diamond Wheels
CHEMICAL FAMILY: Abrasive Any Grade
FORMULA: n/a

SECTION II COMPOSITION

CHEMICAL NAME	Nickel	Industrial Diamond
REGULATED	Yes	No
CAS#:	7440-02-0	7882-40-3
AGIH TLV	1 0 mgm3	10.0 mg m3 (PNOC)
CARCINOGEN	Yes	No

Materials are regulated by OSHA 29 CFR 1910.1200, Hazard Communication Standard

SECTION III - PHYSICAL AND CHEMICAL DATA

BOILING POINT (F)	n/a	MELTING POINT	n/a
SPECIFIC GRAVITY	n/a	VAPOR PRESSURE	n/a
VAPOR DENSITY	n/a	EVAPORATION RATE	n/a
SOLUBILITY IN WATER	n/a	SOLUBILITY IN ALCOHOL	n/a
		SOLUBILITY IN OTHER SOLVENT	n/a
		PERCENT VOLATILE BY VOLUME (%)	n/a

APPEARANCE AND ODOR Solid, Clear, White To Yellow To Dark Crystals Silver Color.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT	n/a		
(METHOD USED)	FLAMMABLE LIMITS	LEL	UEL
EXTINGUISHING MEDIA		n/a	
SPECIAL FIRE FIGHTING PROCEDURES:		n/a	
UNUSUAL FIRE AND EXPLOSION HAZARDS:		n/a	

SECTION V - HEALTH, FIRST AID AND MEDICAL DATA

PRIMARY ROUTE(S) OF ENTRY: Inhalation, Ingestion, Skin, Eye(s)

EFFECTS OF OVEREXPOSURE
INHALATION: Difficulty in breathing (Dust from wheel use).
INGESTION: If a dust, symptoms are variable.
SKIN: Irritation (especially if sensitive to Ni).
EYE(S): Irritation (from Ni or diamond particle).
FIRST AID AND MEDICAL INFORMATION:
INHALATION: Move to fresh air. Give oxygen if necessary
INGESTION: Obtain medical attention.
SKIN: Wash thoroughly with water Obtain medical help if necessary
EYE(S): Flush thoroughly with water. Obtain medical assistance

OTHER POTENTIAL HEALTH RISKS
Nickel (Ni) is listed as a carcinogen Avoid long exposure. Consult medical personnel for first aid and medical information

SECTION VI - CORROSIVELY AND REACTIVITY DATA

STABILITY:	Unstable ( )	Stable (x)
POLYMERIZATION:	May occur ( )	Will not occur (x)
INCOMPATIBILITY: (Materials to avoid)		n/a
HAZARDOUS COMPOSITIONS PRODUCTS:		n/a

CONDITIONS TO BE AVOIDED: Contact with strong acids/caustics, enclosed areas.

SECTION VII - SPILL, LEAK AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Normal clean up procedure

WASTE DISPOSAL METHOD:
Waste will contain nickel. Dispose in accordance with all applicable Federal, state, and local regulations.

SECTION VIII – PERSONAL PROTECTION INFORMATION

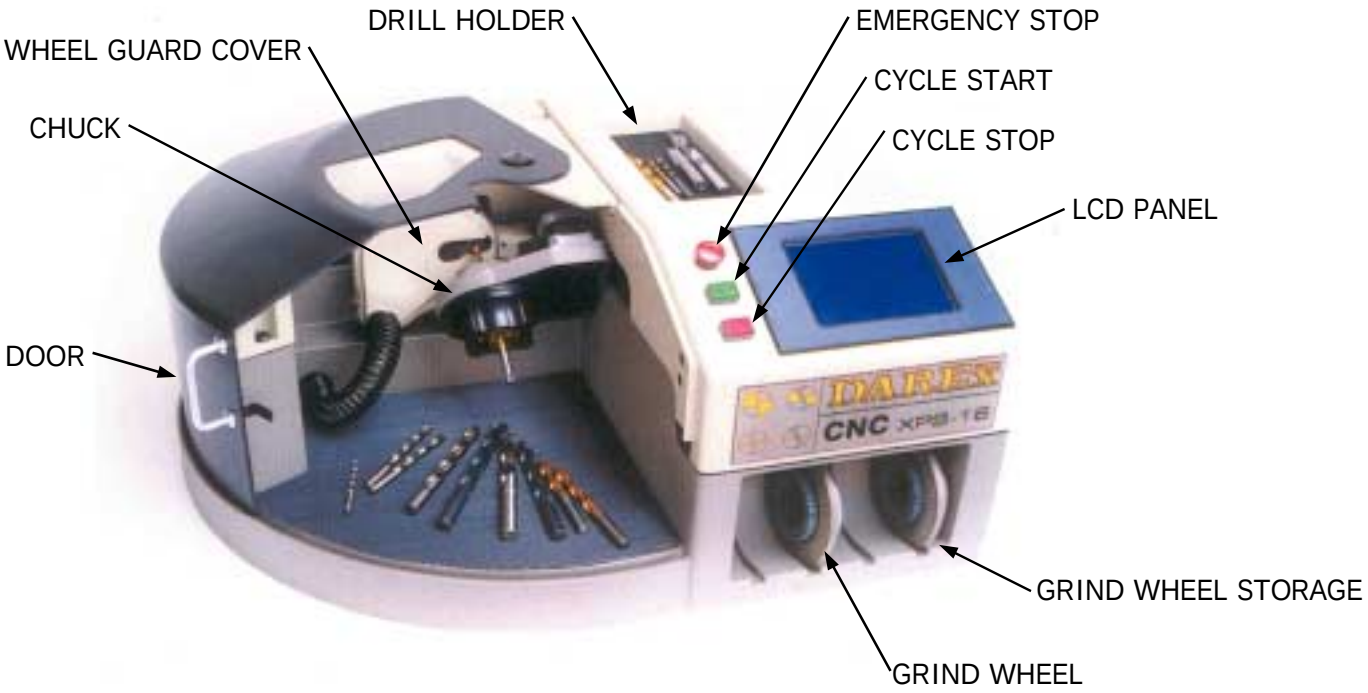
RESPIRATORY PROTECTION:
Respiratory protection as needed see OSHA-29 CFR 1910.134

VENTILATION: LOCAL EXHAUST: strongly preferred
MECHANICAL (GENERAL): Use only if adequate to maintain below TLV's.
PROTECTIVE GLOVES: As desired by user.
EYE PROTECTION: Recommended see OSHA29 CFR 11910.215
OTHER PROTECTIVE EQUIPMENT: Use standard precautions for grinding operations.

SECTION IX - STORAGE AND HANDLING PROCEDURES

NORMAL STORAGE AND HANDLING:
Store in clean, dry area, away from chemicals.
NORMAL USE: Use adequate ventilation (See Section VIII)

XPS-16 CNC DRILL SHARPENER



XPS-16 Auto Measurement Features

Your XPS-16 has many features so carefully designed and engineered that you may not even be aware of their uniqueness. Once the cycle start button has been pushed, your Darex XPS-16 begins taking measurements of the drill, on the way to the grinding wheel. Your XPS-16 locates the end of the drill, calculates diameter, locates and positions cutting edge, determines web thickness, identifies initial contact point of drill to the wheel and then sharpens. After sharpening and before splitting the drill, your XPS-16 sharpener again, measures and re-locates the end of the drill insuring an accurate split.

Specifications

- **Standard Grinding Wheels:** 150 Grit CBN - HSS, Cobalt & 220 Grit DIA - Carbide
- **Operating temperature:** Not less than 7°C (45°F) or more than 32°C (90° F)
- **Motor Specs:** DC motor 115/230 VAC RPM 3550
- **Power requirements:** 8 amp @ 115 VAC; 4 amp @ 230 VAC
- **Machine Dimensions:** 66cm W x 56cm D x 30.5cm H (26” W x 22” D x 12” H)
- **Machine Weight:** 52 kg (115lbs)
- **Shipping Dimension:** 78cm W x 89cm D x 45cm H (31” W x 35” D x 18” H)
- **Vacuum Dimensions:** 36cm D x 49cm H (14” D x 18” H)
- **Vacuum Weight:** 14 kg (30lbs)
- **Total Ship Weight:** 66 kg (145lbs)
- **Warranty:** 2 years defective parts and labor

Capabilities & Performance

- **Drill Types:** Two fluted HSS, Cobalt or Carbide SAE & Metric twist drills
- **Point Styles:** Four Facet & Standard Conic points
- **Split Point Styles:** Standard X split and Radius split
- **Point Angles:** 118° - 150°
- **Drill Diameter:** 3mm - 16mm (.118 to .629)
- **Drill Length** 50.8mm - 222.3mm (2” to 8.750)

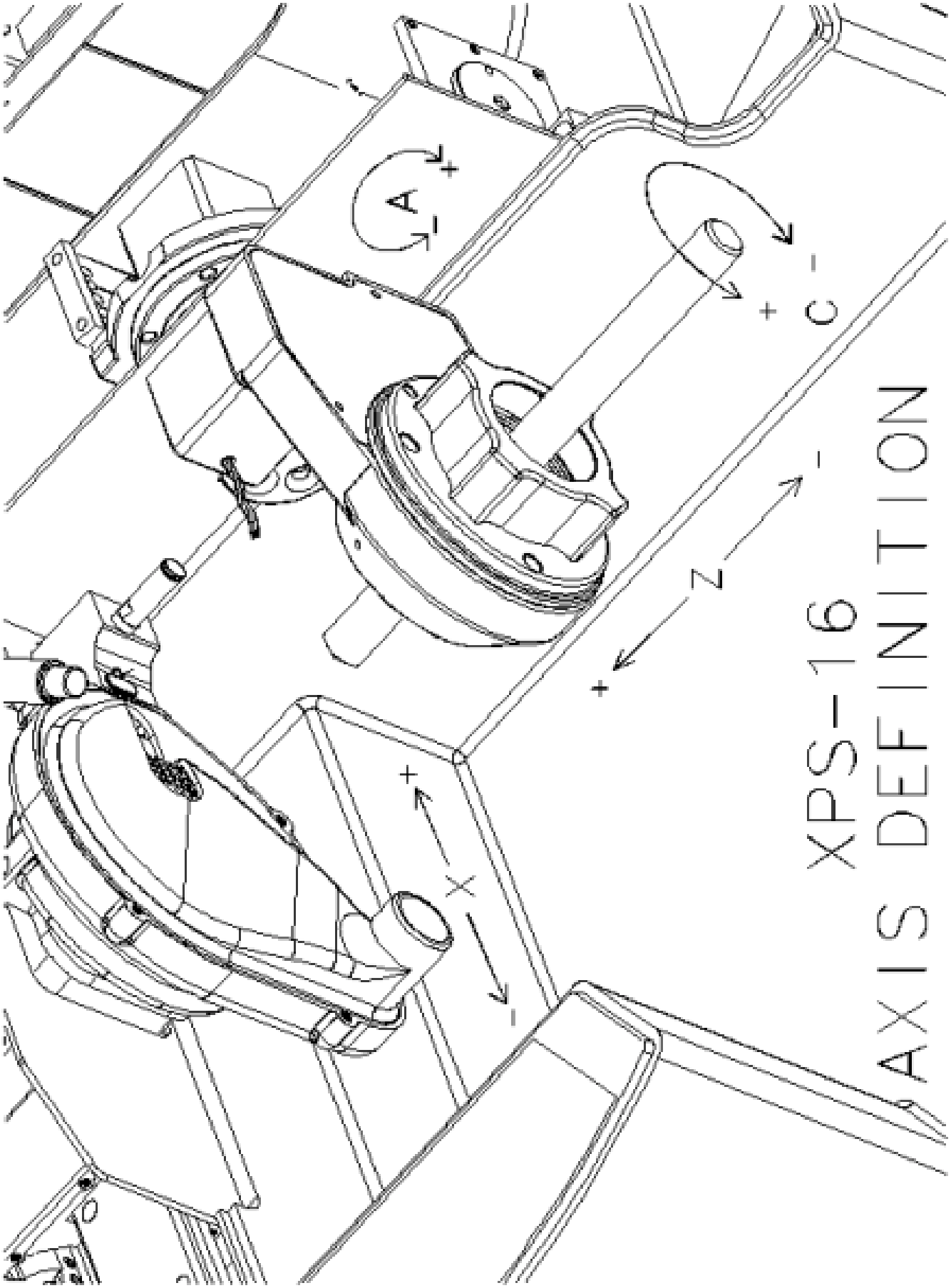
Tolerances

- **Lip Height Accuracy:** ANSI B94.11, NAS 907 and ISO 10899 Standards
- **Point Angle:** 118° - 150° with a tolerance of +/- 2°
- **Relief:** 5° - 18° margin relief with a tolerance of +/- 2°
- **Split Angle:** 120° - 170° with a tolerance of +/- 5°
- **Fan Angle:** Tolerance of +/- 15°

Approximate Grinding Performance Times using drills with a standard web thickness

Material	Point Angle (Degree)	Diameter (inch)	MTO (inch)	Relief (Degree)	Hone Time (sec)	*Grind Times: No Split	*Grind Times: X-Split
HSS	118°	.125	.005	11°	0	: 36	: 56
HSS	118°	.375	.005	9°	0	: 45	1:13
HSS	118°	.625	.005	7°	0	: 49	1:25
CARBIDE	135°	.125	.006	11°	1	: 44	1:08
CARBIDE	135°	.375	.006	9°	3	: 58	1:30
CARBIDE	135°	.625	.005	7°	5	1:16	1:59
Approximate grind times based on using a new grinding wheel							

Machine Axis Definition



Machine Axis definition

TOUCH SCREEN ICON REFERENCE

For more information on Icons refer to the Touch Screen Details section pages 19 to 30

CYCLE START (GREEN) Refer to information on page 30

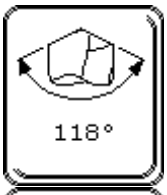
CYCLE STOP (AMBER) Refer to information on page 30

CONTINUE

STOP or EXIT

HOME - SHUT DOWN/RETURN TO Refer to information on page 30

MAIN SET UP SCREEN ICONS



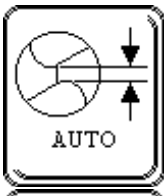
POINT ANGLE SELECTION SCREEN Refer to information on page 19

MINIMUM MATERIAL REMOVAL Refer to information on page 20

MID RANGE MATERIAL REMOVAL Refer to information on page 20

MAXIMUM MATERIAL REMOVAL Refer to information on page 20

DIAMETER DETECTION SCREEN Refer to information on page 20



WEB THICKNESS DETECTION SCREEN Refer to information on page 20

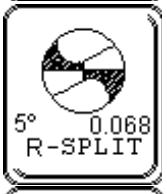
HONE OPTION SELECTED Refer to information on page 21

NO HONE SELECTED Refer to information on page 21

HONE ONLY Refer to information on page 21

NO SPLIT SELECTED Refer to information on page 22

STANDARD SPLIT POINT Refer to information on page 22



RADIUS SPLIT POINT Refer to information on page 22

MARGIN RELIEF SELECTION SCREEN Refer to information on page 22

HIGH SPEED STEEL or COBALT MATERIAL Refer to information on page 23

CARBIDE MATERIAL Refer to information on page 23

FILE MANAGEMENT - TEMPORARY-MEMORY Refer to information on page 23

Touch Screen Icon Reference

QUICK START MENU Refer to information on page 24

TOOLS, OFFSET & MAINTENANCE PAGE Refer to information on page 25

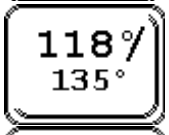
QUICK START SET UP SCREEN ICONS

CONIC GRIND - MAIN SET UP SCREEN AND QUICK START Refer to information on page 24

CONIC STANDARD SPLIT GRIND - QUICK START Refer to information on page 24

FACET GRIND - MAIN SET UP SCREEN AND QUICK START Refer to information on page 24

FACET STANDARD SPLIT GRIND - QUICK START Refer to information on page 24



118-DEGREE POINT ANGLE - QUICK START Refer to information on page 24

135-DEGREE POINT ANGLE - QUICK START Refer to information on page 24

CANCEL AND RETURN TO MAIN SET UP SCREEN

MAIN SET UP 2ND LEVEL SCREEN ICONS

"INCHES" - METHOD OF MEASUREMENT Refer to information on page 20

"METRIC" - METHOD OF MEASUREMENT Refer to information on page 20

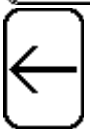
ADVANCE Refer to information on page 21

AUTO MODE SELECTOR Refer to information on page 20

MANUAL ALIGN KEY Refer to information on page 21

CANCEL KEY

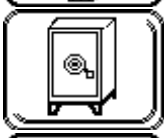
SAVE CHANGES


BACKSPACE WILL ERASE TEXT

TOOLS, OFFSET & MAINTENANCE SCREEN 2ND LEVEL ICONS

SPACE Refer to information on page 24

DELETE FILE KEY Refer to information on page 24


SAVE SCREEN - TO FLASH MEMORY Refer to information on page 25

FILE OPEN Refer to information on page 23

CURSOR DOWN ARROW

CURSOR UP ARROW

PAGE DOWN ARROW

PAGE UP ARROW

TO MOVE A MACHINE AXIS IN THE POSITIVE DIRECTION

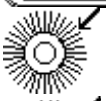
TO MOVE A MACHINE AXIS IN THE NEGATIVE DIRECTION

HONE TIMING ADJUSTMENT Refer to information on page 29

SCREEN CONTRAST ADJUSTMENT Refer to information on page 29

TOUCH SCREEN SENSITIVITY ADJUSTMENT Refer to information on page 30

HONING WHEEL POSITION OFFSET Refer to information on page 29



HONE BRUSH EDGE OFFSET

HONE BRUSH FACE OFFSET

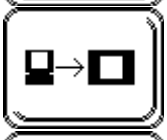
WHEEL POSITION OFFSET Refer to information on page 26

WHEEL EDGE OFFSET

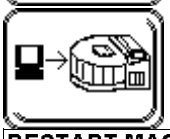
WHEEL FACE OFFSET

SPLIT POINT OFFSET Refer to information on page 27

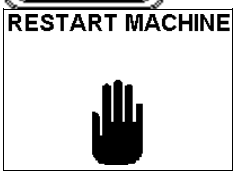
DOWN LOAD Refer to information on page 25



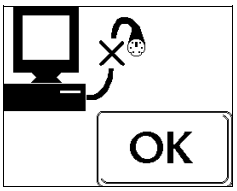
UI Update Button (USER INTERFACE) – From PC to XPS-16 Refer to information on page 37



Controller Update Button – From PC to XPS-16 Refer to information on page 41



Restart machine Refer to information on page 38



BROKEN CONNECTION - DOWN LOAD NOT SUCCESSFUL Refer to information on page 54

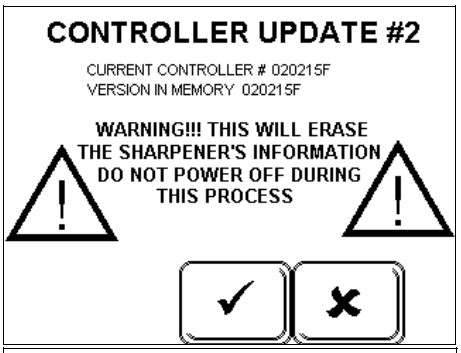
SAVE FILES/SETTINGS - TO PC FROM XPS-16 Refer to information on page 39

OPEN/RESTORE FILES AND SETTING - FROM PC TO XPS-16 Refer to information on page 40

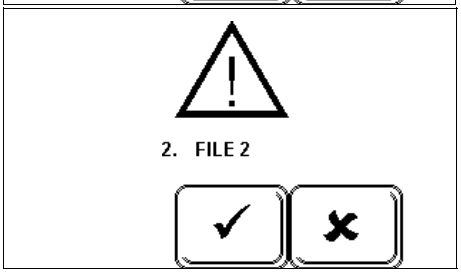
BELT CHANGE Refer to information on page 26

INACCESSIBLE TO CUSTOMER - FOR FACTORY USE ONLY Refer to information on page 25

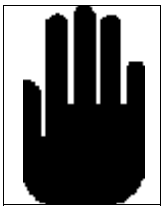
ALARMS AND MAINTENANCE



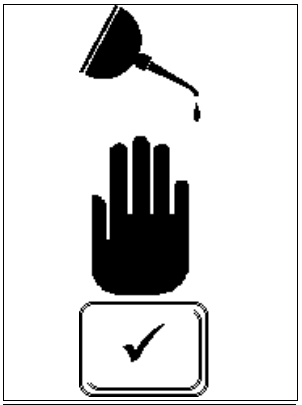
CONTROLLER DOWNLOADING WARNING Refer to information on page 41



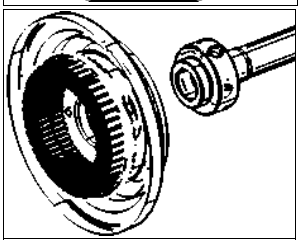
CUSTOM FILE SAVE OVER WARNING Refer to information on page 24



PAUSE OR CANNOT CONTINUE AT THIS TIME Refer to information on page 26

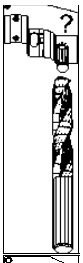


IN LUBING CYCLE SCREEN Refer to information on page 65

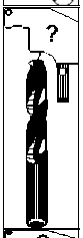


GRINDING WHEEL CHANGE NECESSARY Refer to information on page 23

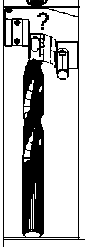
Touch Screen Icon Reference



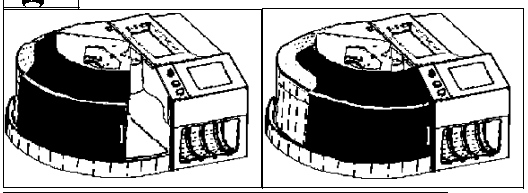
MATERIAL TAKE OFF #1 ALARM UNABLE TO DETECT END OF DRILL Refer to information on page 53



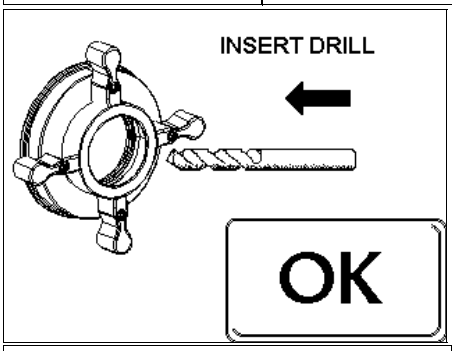
CUTTING EDGE DETECTION ALARM - UNABLE TO LOCATE CUTTING EDGE Refer to information on page 53



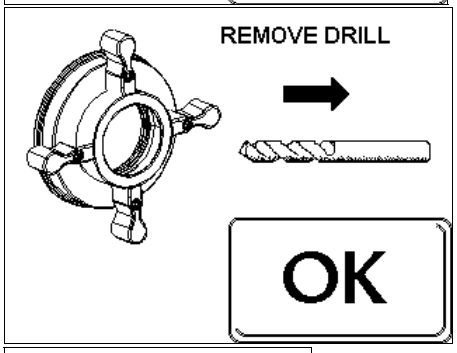
MATERIAL TAKEOFF #2 ALARM Refer to information on page 53



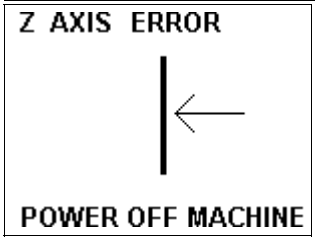
CLOSE DOOR ALARM Refer to page 54



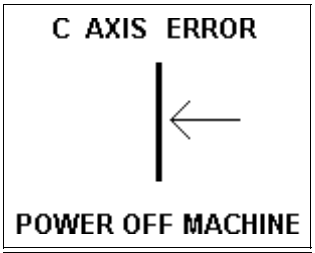
INSERT DRILL ALARM - NO DRILL DETECTED IN CHUCK Refer to information on page 53



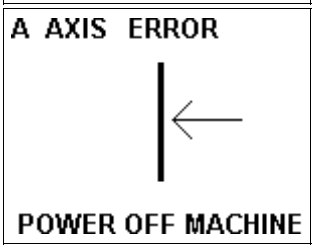
REMOVE DRILL ALARM - DRILL LEFT IN CHUCK Refer to information on page 53



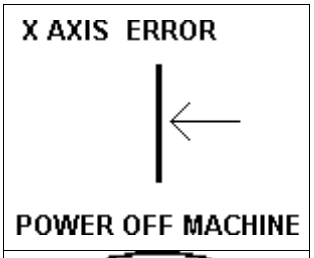
Z - AXIS ALARM Refer to information on page 54



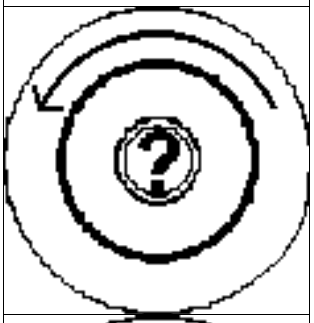
C-AXIS ALARM Refer to information on page 54



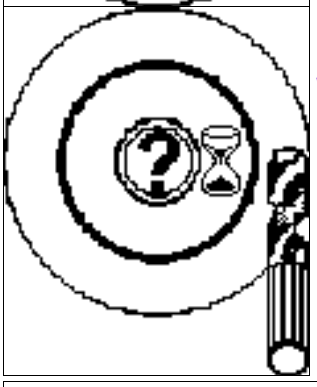
A-AXIS ALARM Refer to information on page 54



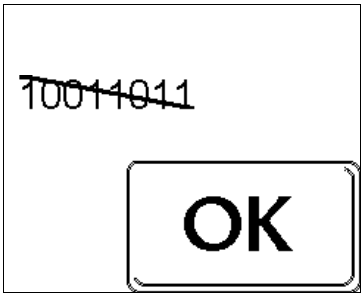
X-AXIS ALARM Refer to information on page 54



GRIND MOTOR ERROR - Refer to information on page 53



WHEEL TIME OUT ERROR Refer to information on page 53



BAD CODE ERROR Refer to information on page 54

Sharpening Your First Drill

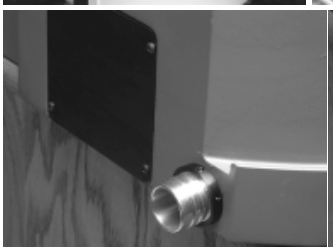
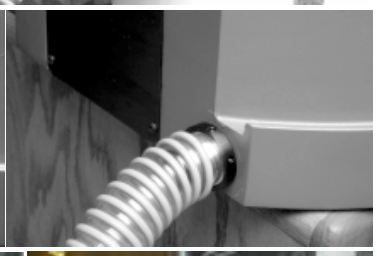
USING THE *QUICK START* MENU, LETS SHARPEN YOUR FIRST DRILL

***The Quick Start Screen produces 4 standard point styles with 2-point angle options. In this screen all point style parameters and off sets are fixed, you cannot customize or change the point style. Customizing the drill point style can be done using the Main Set-up Screen.** Refer to information beginning on page 19

Quick steps to sharpening your first drill on your new CNC XPS-16 Drill Sharpener

Example: Creating a 118-degree, conic, X split drill

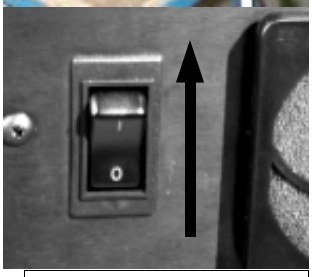
Connect vacuum hoses and vacuum power cord to sharpener. Refer to information on page 47

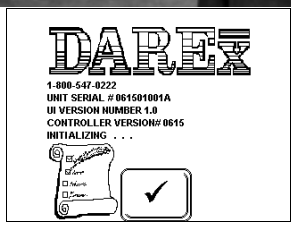
WARNING: DO NOT USE XPS-16 WITHOUT VACUUM CONNECTED. IN ADDITION TO REMOVING GRINDING PARTICLES, THE AIR FLOW COOLS THE GRINDING MOTOR.

2. Plug in machine and release emergency stop button.

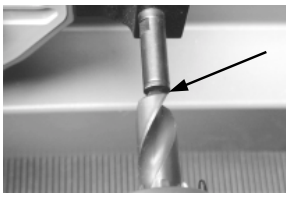
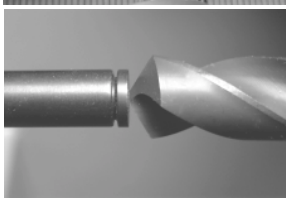
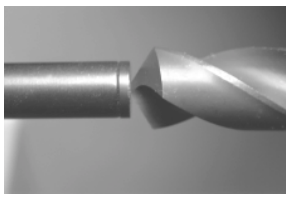
3. Located on the right side of the machine is the ON/OFF rocker switch. To power up machine, push rocker switch up.



Touch the ✓ on the LCD Screen; the Self Test Initialization program will run. After initialization is complete the Main Set Up Screen will come up. Refer to information on page 19



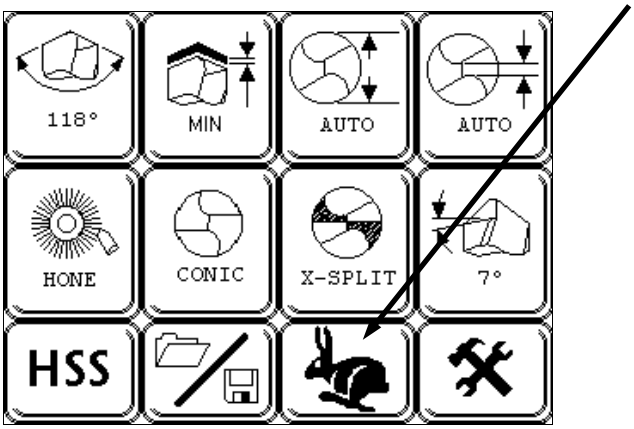
2. Insert a 118-degree drill in chuck. With the cutting edge rotated in approximately the 2:00 position, push in and hold the tip of drill up against plunger, while tightening chuck to secure drill position. Do not over tighten chuck.

NOTE: The plunger or stop is spring-loaded, drill must push plunger in all the way

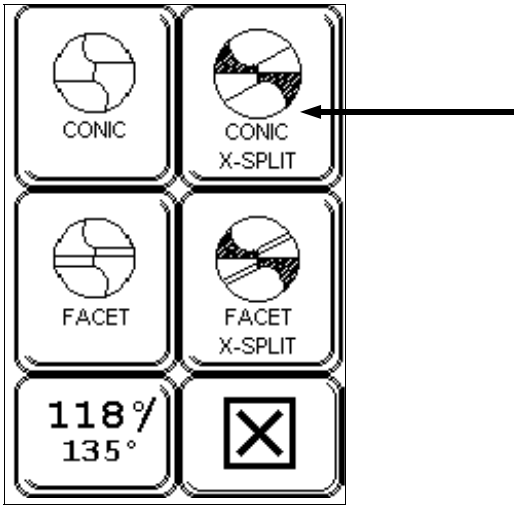
6. Close machine door.

7. Touch Quick Start Menu Icon on Main Setup Screen.

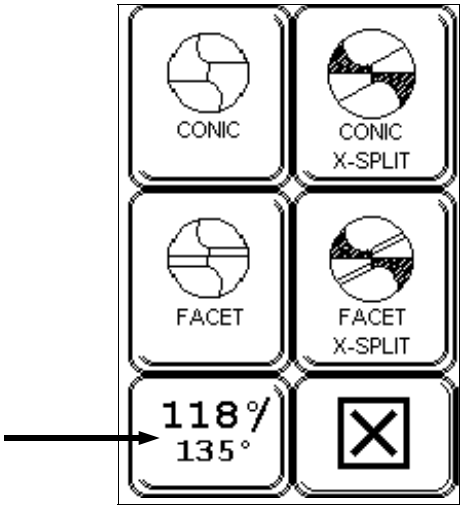


Sharpening Your First Drill

8. Touch Conic X-Split Icon on Quick Start screen.



9. "POINT ANGLE" Icon defaults to 118°; touch "POINT ANGLE" Icon to toggle between 118 or 135.



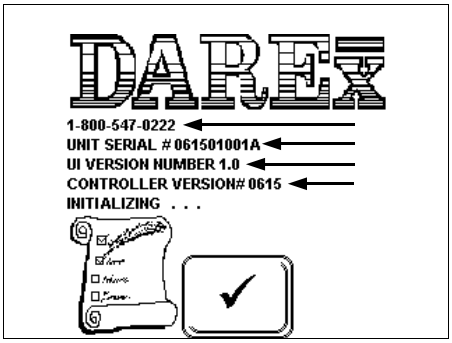
10. Press "CYCLE START" button to sharpen.

Once the cycle start button has been pressed, the button will remain illuminated. When the sharpening cycle is finished, the machine will return to the home position and the cycle start button light will go out. Open door, loosen chuck and remove drill.

Touch Screen Details

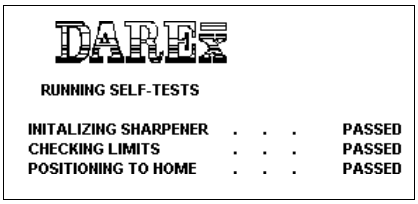
Power up the XPS-16 sharpener Refer to information on page 17 and connect vacuum system, for details Refer to information on page 47

Self Test Initialization Screen



The initialization screen displays important information. On the first line you will find the Darex toll free phone number, the 2nd line displays the machine serial #. The next line has the current User Interface software version followed by the Controller software version. This information is necessary when updating your software or for technical inquiries.

- Remove the drill and touch the "check" on the screen; the Self Test Initialization program will begin. The machine will begin initialization tests, checking sensors, verifying limit positions, moving and parking the machine at home. After initialization is successful, a screen will flash listing each test as passed, then immediately transferring to the Main Set-up Screen.

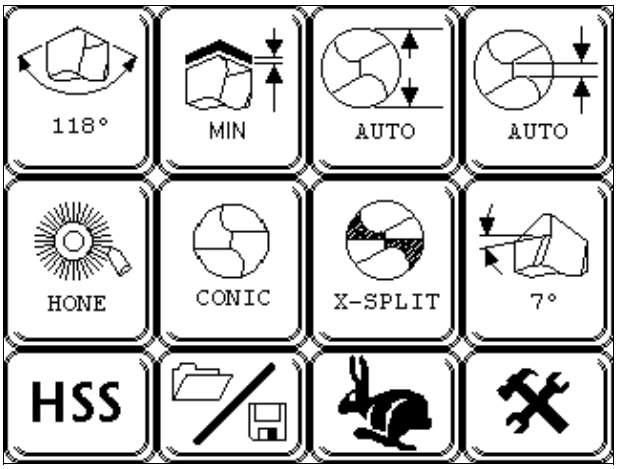


- If initialization is unsuccessful, the word FAILED will appear, making continuation impossible. Power down machine, restart and retry initialization. If initialization fails again, Call Darex for assistance.

XPS-16 SHARPENER TOUCH SCREEN DETAILS

NOTE: If the touch screen remains idle for longer than 15 minutes, the LCD backlight and grinding wheel will shut down, however, the machine will remain powered up. Lightly, touch anyplace on the face of the LCD screen to activate the backlight.

Main Set-up Screen

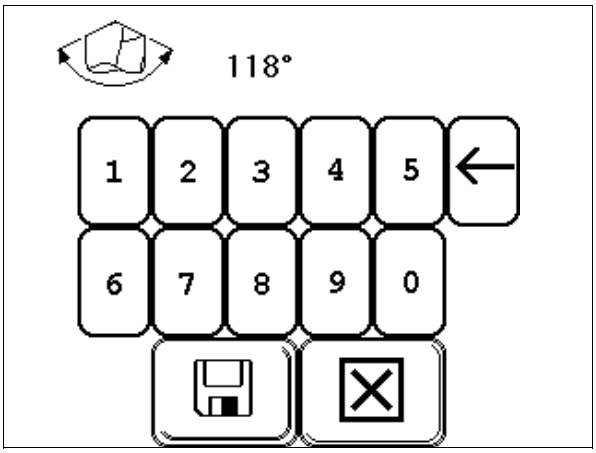


Point Angle Screen Selector

- Sharpen point angles of 118° to 150°. Touch the "POINT ANGLE SCREEN" Selector , the Point Angle Screen will come up.

NOTE: Factory default is "118°".
For 90° capabilities call Darex.

Point Angle Screen



- Type in desired point angle degree.

NOTE: If you enter a point angle outside the capability range of the sharpener, the setting will default to the closest MIN/MAX point angle degree.

- Use the "BACKSPACE" button to erase information incorrectly entered.
- Touch the "SAVE" button to store and transfer the "New" information to the Main Set-up Screen.
- Selecting "CANCEL" will delete any unsaved data, retrieving the most recently saved information, transferring you back to the Main Set-up Screen.

Material Removal Selector

- Each touch of the icon will bring up the next material removal option. You have three choices: MIN, MID OR MAX

Use MIN when touching up your facet and conic ground drills
Use MID when sharpening chipped facet and conic drills
Use MAX when changing point angles or repairing heavily damaged points on conic drills only
MAX grind is not an option when a Facet point style is selected

NOTE: Factory default is "MIN"

SETTING	APPROXIMATE AMOUNT OF MATERIAL REMOVAL
MIN	.000 - .010 (.254mm)
MID	.005 - .015 (.127mm - .381mm)
MAX	.015 -.020 (.381mm - .508mm)

NOTE: The "MIN/MID/MAX" material removal grind amount is approximate. Point angle, lip relief and point style will cause the material removal amount to vary.

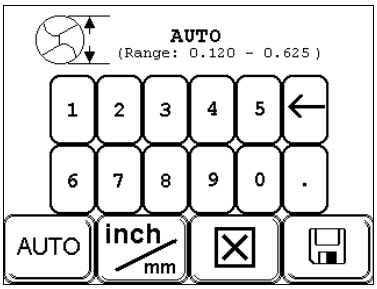
Diameter Screen Selector

- Sharpen drills with a diameter range of .118 -.629 (3mm-16mm). Touch the icon to bring up the Diameter Screen, you have 2 options: Manual or Auto.

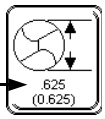
NOTE: Factory default is "AUTO" mode.

- When "AUTO" mode is selected, the drill diameter will be detected automatically as it begins the sharpening cycle. The calculated diameter will be displayed in the diameter selector icon.
- Entering the drill diameter manually is an option and necessary when the drill being held in the chuck jaws is of a different diameter than that of the drill diameter actually being sharpened. (Example: Step Drill Pilot)

Diameter Selector Screen



- Use the number pad to type in the correct drill diameter, including decimal point. The diameter entered will appear on the Main Screen Diameter Selector button and will disable the auto mode.



NOTE: If you enter a drill diameter size outside the capability range of the sharpener, the setting will default to the closest MIN/MAX diameter size.

- Choose method of measurement, either "inch" or "mm" (metric) . Each touch of this button will toggle between the two choices. The method of measurement brought up to the top and in slightly larger font is the selected type of measurement and all other numbers will be displayed in that choice of measurement.

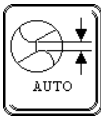
- Use the "BACKSPACE" button to erase information incorrectly entered.

- Touch the "SAVE" button to store and transfer the "New" information to the Main Set-up Screen.

- Selecting "CANCEL" will delete any unsaved data, retrieving the most recently saved information, transferring you back to the Main Set-up Screen.

- To exit manual mode, touch the "AUTO" button, on the number pad.

Web Thickness Screen Selector



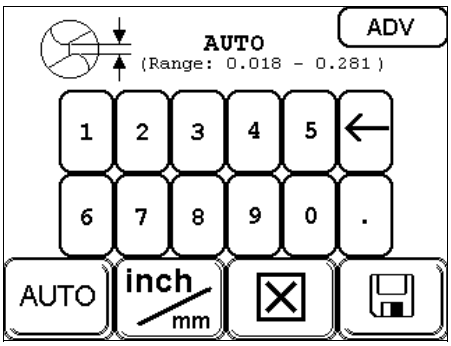
- Detect Web thickness range from 15% to 45% of the drills diameter or .018 - .281 (.457mm-7.131mm). Touch the icon to bring up the Web Thickness Screen, you have 2 options: Manual or Auto.

NOTE: Factory default is "AUTO" mode.

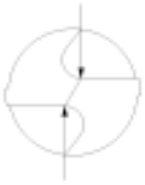
- Sharpen in the "AUTO" mode when creating or regrinding drills with NO split or X split. A fiber optic sensor will calculate the web thickness as it locates the cutting edge.
- Entering the web thickness manually is necessary when creating or regrinding an R split Refer to page 31 or advancing the cutting edge.

Refer to page 35

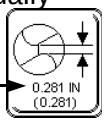
Web Detection Screen



- To manually input the web thickness, measure thickness of the web of the drill. Measure web thickness across two points of the chisel line with calipers



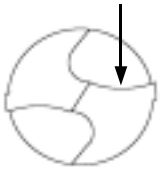
- Type in web thickness, including decimal point. The web thickness, manually entered, will appear on the Main Screen "WEB THICKNESS" Selector button and will disable the auto mode.



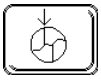
NOTE: If you enter a number outside the capability range of the sharpener, the setting will default to the nearest MIN/MAX web thickness for that specific diameter of drill.

Cutting Edge Advance Button

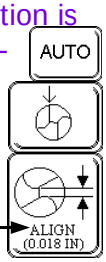
- Located within the Web Detection Screen is the "ADVANCE" button. Using this feature may be necessary when the drills cutting edge aligns incorrectly. To compensate for incorrect cutting edge alignment, you can manually advance the cutting edge using the "ADVANCE" button . This may be necessary when sharpening drills with a hooked cutting edge. Refer to page 35



Manual Align Button



- This feature allows you to bypass the fiber optic sensor alignment process. Measure and enter the web thickness of the drill, if you do not enter the web thickness, the value will default to the minimum web thickness value within that range. If the diameter detection is in Auto, the web thickness value will default to the minimum once the diameter has been detected. Touch the Auto button in web detection, the Manual Align button will come up. Touch Save. Align and the web thickness will appear in the icon on the main page. Insert the drill with the cutting edge at 12 o'clock. Tighten chuck & press cycle start.



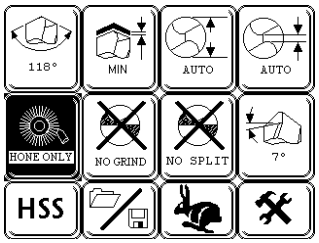
Hone Selector

- With each touch of the icon you will bring up the next honing option. You have 3 options: Hone, No Hone or Hone Only

NOTE: Factory default is "NO HONE".

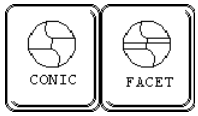
- Select "HONE" when sharpening carbide drills. Honing the carbide cutting edge greatly influences tool life and the accuracy of the finished surface. The length of hone time is adjustable. The longer the drills cutting edge remains in the honing cycle, the larger the radius produced on the cutting edge. Refer to page 45. Go to the Hone Timing Adjustment Screen, in the **Tools, Maintenance and Offset screen** to make honing time adjustments. Refer to page 29

- Select "NO HONE" when sharpening High Speed Steel or Cobalt drills.
- Select "HONE ONLY" when only honing drills. Grinding and Splitting will be disabled.



Grind Selector

- With each touch of the button you will bring up the next point style option. There are 2 point style options: Conic or Facet

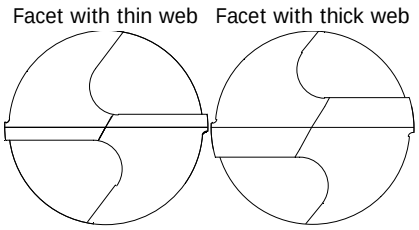


NOTE: Factory default is "CONIC".

- "CONIC" – This radial/cone style grind is known as a conventional point and used through out the machine tool industry. A lip clearance of 12° to 15° at the periphery of the drill, increasing constantly toward the center, is considered standard for the average class of work.

- "FACET" – Multi faceted drill points consist of a separate cutting lip (primary) and secondary heel clearance (relief) facet. The multi-faceted drill, feature 150% less thrust and produces 70% less heat than a conventional drill.
- The width of the primary facet is determined by the thickness of the drills web and cannot be changed. If your drill has a thin web, we do not recommend a facet point style. The width

of the primary facet produced may be very thin. The thicker the web of your drill, the wider the primary facet will appear.

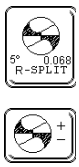


Split Point Selector

- With each touch of the icon you will bring up the next split style option. There are 3 split point options: No Split, X- split (Standard) and R- Split. (Radius) The XPS-16 will produce a chisel angle ground to approximately 130°.

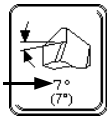
NOTE: Factory default is "NO SPLIT".

- "NO SPLIT" – Select when reproducing a non-split drill point style.
- "X-SPLIT" – 4° split point rake angle is created, producing a drill with a self-centering point. Its advantages are the ability to reduce thrust and eliminate walking at the drill point. This is a distinct advantage where drilling bushings/fixtures are not used.



- "R-SPLIT" – The R-split selection is not an option until the web thickness value has been manually entered. Changing the amount of radius and rotation is adjustable. This is done in the Split Point Offset screen **.** Refer to information on page 31 for details.
- An R-split will produce a drill with a self-centering point as well as act as a chip breaker producing smaller chips, which can readily be ejected. The radius will assist the flow of chips and reduce chip impaction at the tip of the drill.

Relief Screen Selector



- Select lip relief clearance from 5° to 18° +/-2°. The diameter and the point angle will determine the degrees of possible relief. See tables below.

NOTE: The degree of relief entered, will appear on the relief selector button on the main screen menu.

POINT ANGLE 118 – 124

DIAMETER	DEGREES OF RELIEF
.118 – .245	**8 – 18**
.245 – .370	**6 – 16**
.370 – .495	**5 – 14**
.495 – .625	**5 – 12**

POINT ANGLE 125-134

DIAMETER	DEGREES OF RELIEF
.118 – .245	**8 – 16**
.245 – .370	**6 – 14**
.370 – .495	**5 – 12**
.495 – .625	**5 – 10**

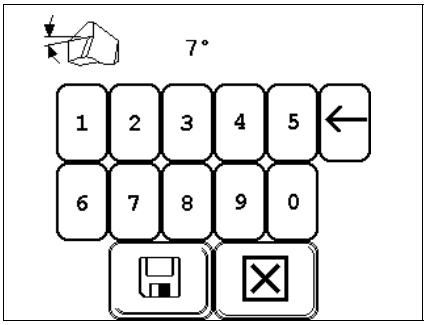
POINT ANGLE 135-144

DIAMETER	DEGREES OF RELIEF
.118 – .245	**8 –15**
.245 – .370	**6 – 13**
.370 – .495	**5 – 11**
.495 – .625	**5 – 9**

POINT ANGLE 145-150

DIAMETER	DEGREES OF RELIEF
.118 – .245	**8 – 14**
.245 – .370	**6 – 12**
.370 – .495	**5 – 10**
.495 – .625	**5 – 8**

Relief Screen



- Type in desired margin relief.

NOTE: If you enter a degree of relief outside the capability range of the sharpener or the drill diameter/point angle, the setting will default to the nearest MIN/MAX relief amount for that specific diameter/point angle of drill.

- Use the “BACKSPACE” button to erase information incorrectly entered.
- Touch the “SAVE” button to store and transfer the “New” information to the Main Set-up Screen.
- Selecting “CANCEL” will delete any unsaved data, retrieving the most recently saved information, transferring you back to the Main Set-up Screen.

Drill Material Selector

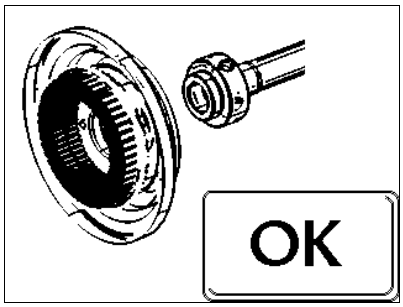
- With each touch of the icon you will bring up the next drill material option. You have two material options: HSS (High Speed Steel) or Carbide.

NOTE: Factory default is “HSS”.

- “HSS” button is selected when sharpening drills made of High Speed Steel or Cobalt. A screen prompting you to change the wheel will appear, after changing to a CBN wheel, touch “OK”, you are ready to sharpen HSS & Cobalt drills.
- “CARBIDE” button is selected when sharpening drills made of Carbide. The grinding speeds will be automatically reduced. A screen prompting you to change the wheel will appear, after changing to a diamond wheel, touch “OK”, you are ready to sharpen carbide drills.

Wheel Change prompt

- After changing to the appropriate wheel, touch “OK” to continue. Main Set-up Screen will be brought back up. Refer to page 49 for wheel change information.



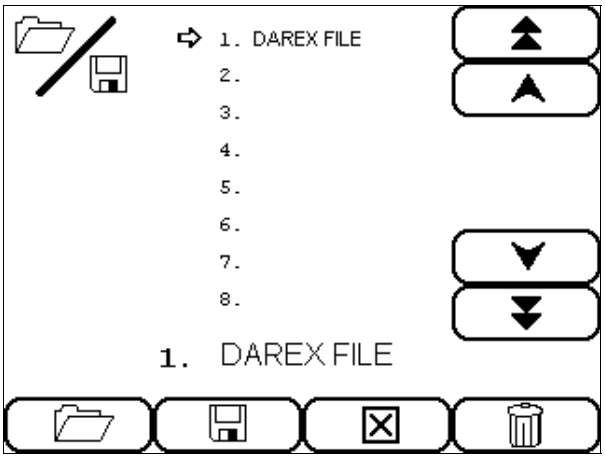
- This screen is just a prompt. The XPS-16 does not know what wheel is mounted. Therefore, if you do not change the wheel as prompted, you risk damage to your wheel.

NOTE: After a wheel change, go to the File Management screen and open the #1. Darex File. Sharpen a drill and if necessary, adjust material removal and the split point center, using the Grinding Wheel Adjustment screen .

File Management Save/Open Screen Selector

- You can create a file to save specific drill point style settings or open an existing file. This will provide custom one touch setup and storage for your most frequently sharpened drills. Memory stores up to 25 user-defined drill point files.
- File 1. is the Darex Factory Standard default file. Use this file to restore offsets to factory parameters. This file cannot be altered or deleted, and will reload its parameters and offset values each time the sharpener is powered up.

File “Open” Screen



Saved files are re-opened in this screen.

- Using the “CURSOR UP” or “CURSOR DOWN” button, move the cursor beside the file you wish to open, touch the “OPEN FILE” button .
- The information previously stored in that file will be loaded and the Main Setup Screen will be brought up.
- The file name will appear at the top of the “FILE SAVE/OPEN” button , identifying the file name that has been called up. All drills will be sharpened to the parameters of this file as long as the file name remains at the top of the icon.

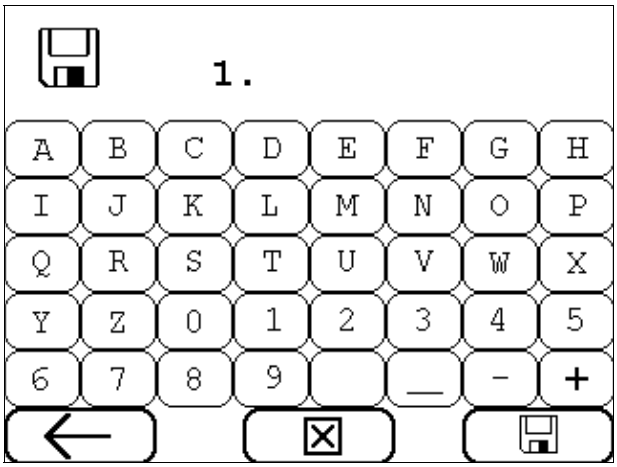
NOTE: Any changes made while in a previously saved file, will immediately exit you from that file. The file name displayed will disappear, indicating you are no longer sharpening to a saved file . To implement the changes made, go back into the file save/open screen and save over the existing file.

Refer to information on page 26

Touch Screen Details

- To delete a previously saved file, place cursor beside file and touch the “DELETE” button .
- To save a new file, touch the “SAVE” button , the “FILE SAVE” screen will be brought up.

“File Save” Screen

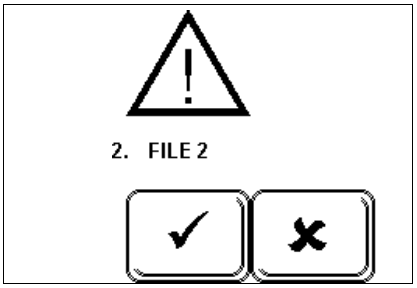


In this screen, you are able to name or rename and save multiple files for future use.

Note: It is a good idea to make a hard copy using the Drill File Form. Refer to page 61

- Type in your new file name.
- Use the “SPACE” button to space between text.
- Use the “BACKSPACE” button to erase information incorrectly entered.
- Type file name and touch the “SAVE” button . Your custom drill point style settings will be saved in Ram Memory.
- Selecting “CANCEL” will delete any unsaved data, retrieving the most recently saved information, transferring you back to the Main Set-up Screen.

NOTE: To save over a custom file, move cursor beside the file you wish to overwrite. Touch the save button. The keypad to rename the file will come up, if it is not necessary to rename the file, touch the save button. The SAVE OVER warning will come up,



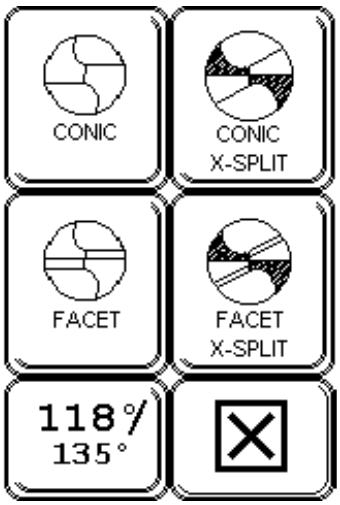
Save Over File Warning Screen

Touch the “CHECK” to complete the save over or the “X” to cancel, taking you back to the main setup screen.

Quick Start Screen Selector

- Brings up the Quick Start Main Screen

“Quick Start” Main Screen



- This screen provides quick, one touch point style set up. In this screen the specifications are factory set and are not adjustable, the Split Point Offset screen is disabled when using the Quick Start Screen. Choose 4 standard point styles, by touching the icon that resembles your desired point style.
- As you touch the “POINT ANGLE” Selector icon in this screen, 118 or 135 will toggle alternately. The point angle brought up to the top and in slightly larger font will be the angle produced in the sharpening cycle .
- To sharpen, press “CYCLE START” .

Quick Start Point Style Selections

Conic/No Split

Conic/X Split Point

Facet/No Split

Facet/X Split Point

Quick Start Point Angle Choices

- 2 point angle options: 118° or 135°

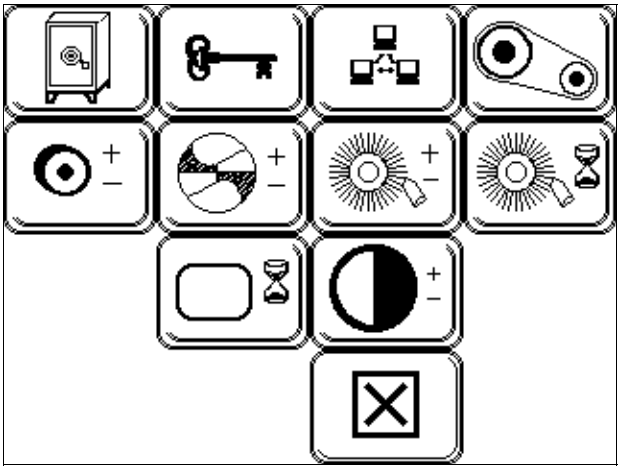
NOTE: Factory default is “118°.

Exit Quick Start Screen

- Takes you back to the Main Start-up Screen

Tools, Offset & Maintenance Screen Selector

Main "TOOLS, OFFSETS & MAINTENANCE" Screen

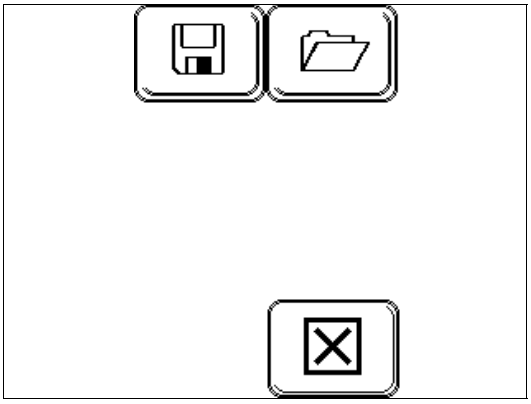


Permanent File Save Screen Selector

- Stores up to 25 drill files and settings at one time. Back up your custom drill files in this screen. If files have not been saved to the permanent memory and LCD failure does occur, all custom settings and files will be lost.

WARNING: Permanent memory will hold up to 25 files at one time; to save more than 25, you must off load saved files to your PC. If you save 25 new files into permanent memory and have not saved or off loaded the previous 25 to your PC, the old files will be overwritten.

Permanent Memory Save Screen



Permanent Memory File Save Button

- To back up all files and settings saved under Temporary Memory, touch the "SAVE" button . Any custom files or settings changed in temporary memory will be overwritten and permanently stored.

Permanent Memory File Restoration Button

- Restore and retrieve the last 25 files and settings saved in Permanent Memory. To restore files touch the "PERMANENT MEMORY FILE RESTORATION" button . The files will be loaded into your File SAVE/OPEN screen located on the Main set-up screen.

Setting Method of Measurement Increments, Inches or Metric.

- Use the Save Button to set the method of measurement default for your XPS-CNC sharpener. Whichever mode the machine is in at the time of saving will become the start up default.

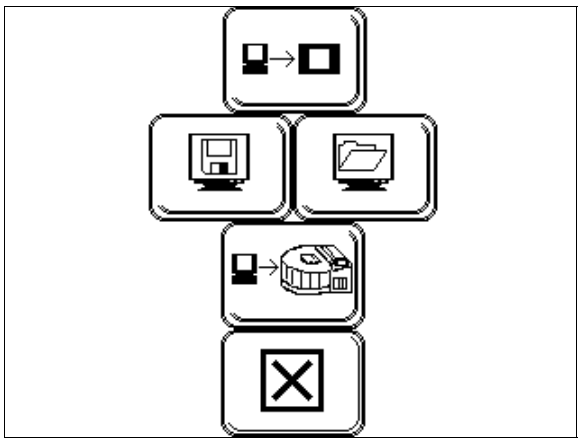
Privacy Code Key

- Inaccessible to customer, for factory use only.

Down Load Screen Selector

- Select this screen for in system programming and down load capabilities. As upgrades and optional custom point styles become available, your machine is equipped to receive these files from our factory to yours. To utilize each of the following screens you will need:

1. RS-232 serial port converter with cable connected from PC to XPS-16
2. PC located close to XPS-16
3. Darex Sloader program must be used to transfer software upgrades and download files. For detailed instructions Refer to information on page 37



Download Screen

UI Update Button – From PC to XPS-16

Upgrade your USER INTERFACE software by touching the “UI update” button.

File Down Load Button

File Down Load button - To PC From XPS-16
Send and store your custom files to your PC

File Restoration Button

File Restoration button - From PC To XPS-16
Restore saved custom files from your PC.

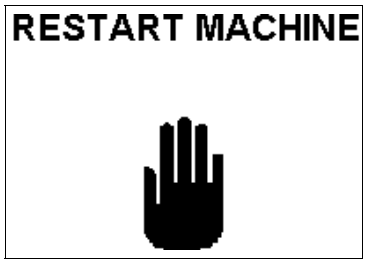
Controller Update Button

Controller Update button - From PC to XPS-16
Update Controller software

Belt Change Screen Selector

- When selected, the machine will move the grinding wheel assembly correctly into position for easy access to adjust or change the grind motor belt. Touch the “BELT CHANGE” button. The grinding wheel will move in to position to easily access the grind motor belt and pulley.
- The machine will go into an *on hold* mode and the motor will shut down.

Restart Machine screen

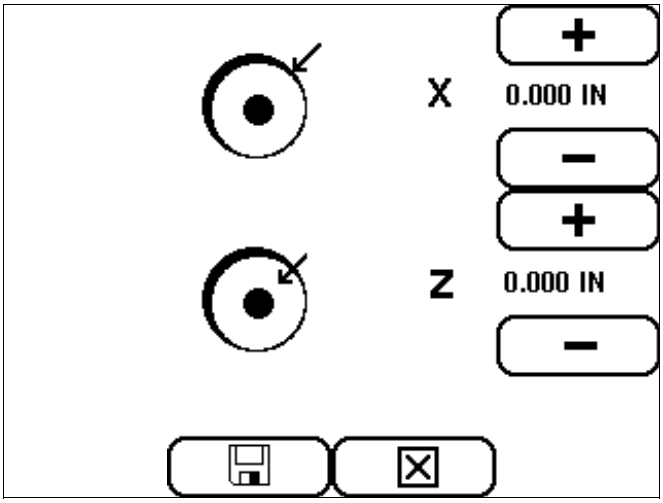


- Once the “Restart” icon has come up on the screen, it is safe to replace the belt.
- You will have to power off the machine and restart to continue. For more instructions on changing the grind motor belt. Refer to Section 24

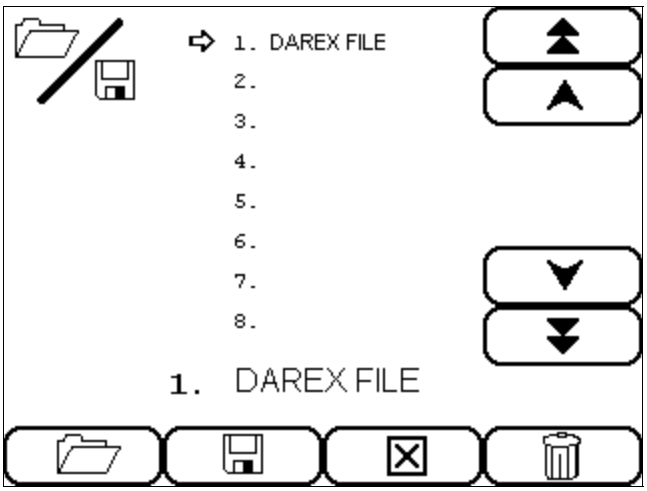
Grinding Wheel Offset Screen Selector

- Adjust wheel offsets in this screen. Make slight wheel offset adjustment after changing to a new or different wheel. For more information see MTO Calibration on Refer to information on page 50

Grinding Wheel Offset Screen



- After changing wheels, it may be necessary to offset the edge and/or the face of the wheel. See Sharpening Tips on page 51
- After a wheel change, call up the Darex Factory default file,



sharpen a drill and adjust wheel according to results produced in this program.

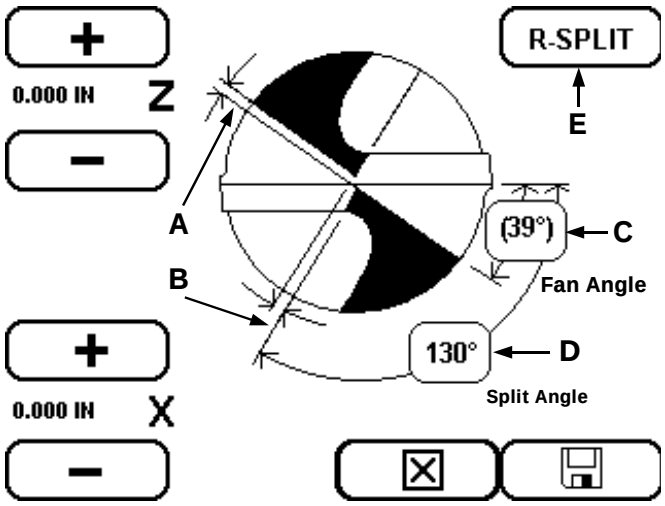
- Verify the amount of material removal from the end of a drill, if it is incorrect; offset the wheel “FACE” accordingly, touch the +Z button , to increase the amount of material removed from the tip of the drill or the -Z button , to decrease the amount.
- Check the centering of the split point, if off center, offset the wheel “EDGE” using the +X button , to move the center split line towards the chisel line on the drill point, sometimes referred to as under split or the -X button to move it away, some times called over split.

- After offsets are entered, touch the "SAVE" button to store the "New" information and transfer you back to the previous screen.
- Selecting "CANCEL" will delete any unsaved data, retrieving the most recently saved information, transferring you back to the previous screen.

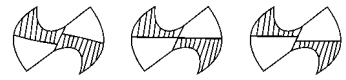
Split Point Offset Screen Selector

- In this screen you can offset 5 different areas of the split point. **A.** Depth of split, **B.** Center of split, **C.** Fan Angle **D.** Split Angle and **E.** Radius Split.

Split Point Offset Screen



A. **Depth of split:** Increase depth of split using the +Z button , or decrease depth of split using the -Z button



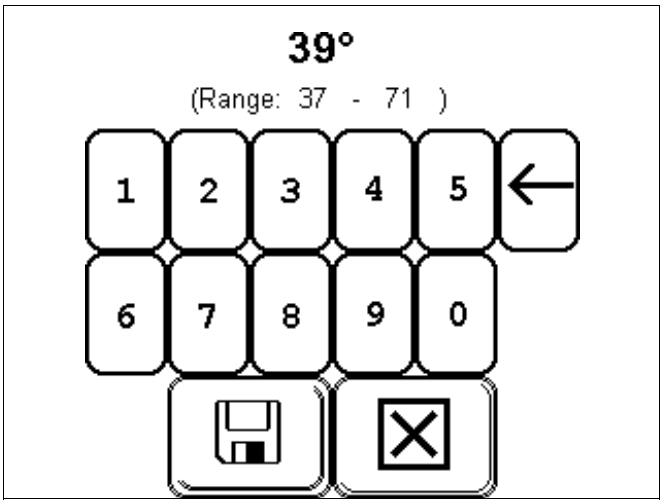
Past Center To Center Not To Center

B. **Center of split:** Use the +X button , to move the center split line towards the chisel line (removes more material) on the drill point, or the -X button , to move it away. (removes less material)

Past Center To Center Not To Center

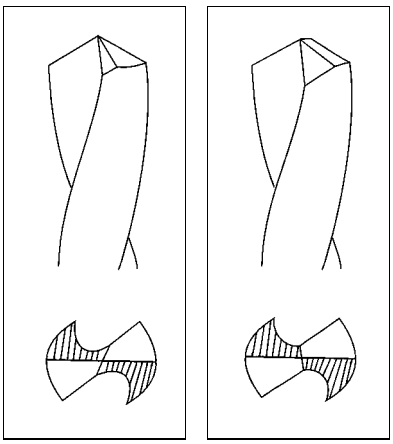
A. **Fan Angle:** This option is more for drill aesthetics than functionality. Utilizing this option may be necessary to remove more or less of the heel to mimic a certain style. The selected split angle, amount of relief and degree of the point angle will determine the actual fan angle produced. Regard the degree entered as a reference number only, the fan angle produced has a tolerance of +/- 15°.

- Touch the "FAN ANGLE" button, the Number Key Pad will come up.

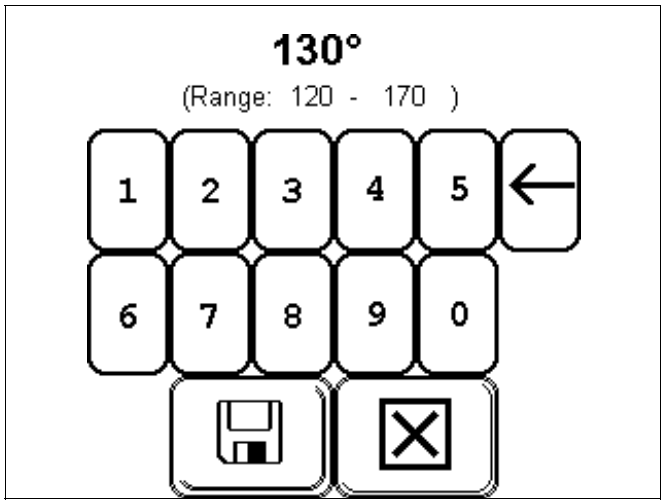


- Type in the desired fan angle degree.
- Touch the "SAVE" button to store the "New" information and transfer you back to the previous screen.
- Selecting "CANCEL" will delete any unsaved data, retrieving the most recently saved information, transferring you back to the previous screen.

D. **Split Angle:** Type in the desired split angle, typically 120° to 130°. By increasing the rotation of the split angle, the split portion of the drill meets the cutting lip at a greater angle, which will give that area more strength and durability. This added split angle creates a pointed profile at the very center of the drill, which will produce a self-centering effect and reduces drill point walking at the start of a hole.



Touch the Split Angle button, the Number Key Pad will come up.



- Type in the desired split angle degree, a tolerance of +/-5° can be expected.
- Touch the "SAVE" button to store the "New" information and transfer you back to the previous screen.
- Selecting "CANCEL" will delete any unsaved data, retrieving the most recently saved information, transferring you back to the previous screen.

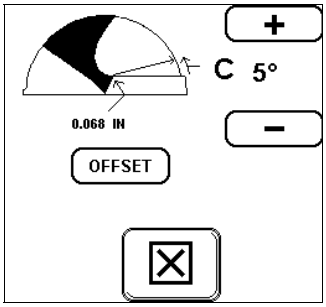
***Do not use the "Split Point Offset Screen" to compensate for changes in the split point due to wheel wear or a wheel change. Make all adjustments for centering split or material removal amount in "Grinding Wheel Adjustment Screen".** Refer to page 26

E. Radius Split Offset: The R-Split button

will appear and will be functional only when a web thickness value is manually input into the "Web Thickness" Screen. The "Web Thickness" Screen is located on the "Main Set up" page. The XPS-16 calculates 30% of the entered web thickness and uses that as the offset default. If this does not produce the amount of radius desired, follow the steps below. For detailed information Refer to page 31

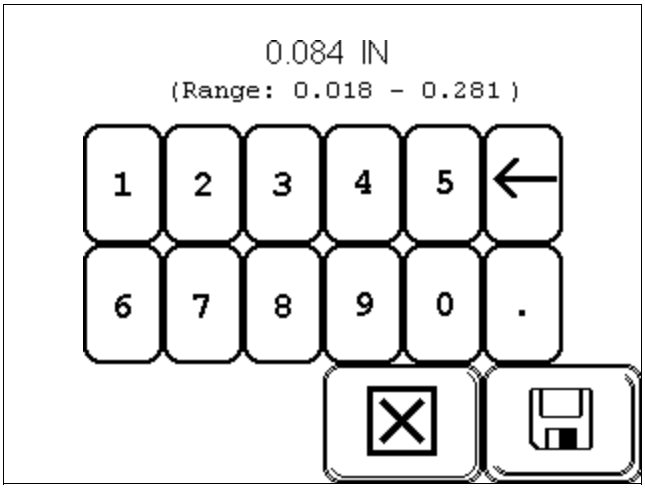
- Touch the "R-Split" button on the Split Point Offset Screen; the Radius Offset Adjustment Screen will come up.

Radius Offset Adjustment Screen



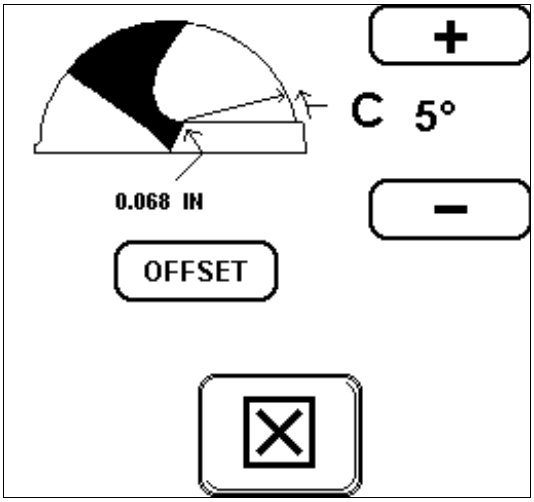
- Touch the "OFFSET" button, the offset keypad will come up.

Radius Offset Key Pad



- Adjust the radius offset by entering an offset larger or smaller than the factory default.
- Type in the offset amount. An offset amount of .001 will produce the largest possible radius on that drill. As your offset gets larger, the radius will become smaller.
- Touch the "SAVE" button to store the "New" information and transfer you back to the previous screen.
- Selecting "CANCEL" will delete any unsaved data, retrieving the most recently saved information, transferring you back to the previous screen.

Adjusting The Rotation of the ARC/C axis



- Adjust the stopping point of the C axis or ARC/ Rotation of the radius. The factory default is 5°. This will stop the cutting edge of the drill 5° from the grinding wheel. In most cases ad-

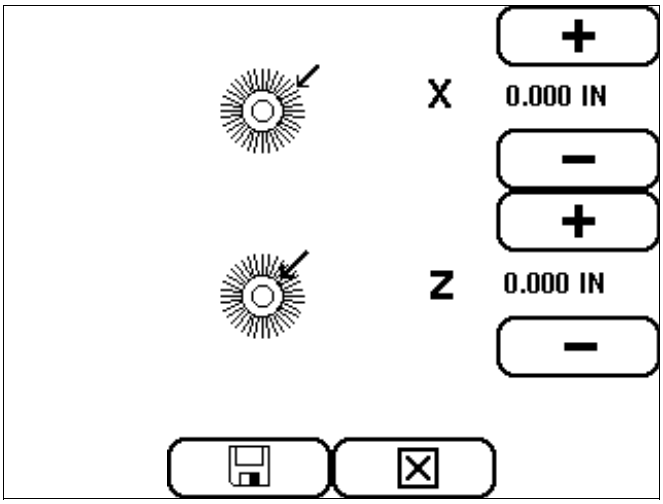
justment of the C axis will not be necessary. Adjustment may be needed if the factory default allows too much rotation and the grinding wheel nicks the cutting edge.

- The +C button will stop the rotation of the cutting edge further away from the grinding wheel.
- The -C button will stop the rotation of the cutting edge closer to the grinding wheel. Refer to page 31 for details on R-Split offsets.
- Touch the “SAVE” button to store the “New” information and transfer you back to the previous screen.
- Selecting “CANCEL” will delete any unsaved data, retrieving the most recently saved information, transferring you back to the previous screen.

Honing Wheel Offset Adjustment Screen Selector

- You will have up to .125 range of adjustment to change the position of drill to the face and edge of the honing brush.

Honing Wheel Adjustment Screen



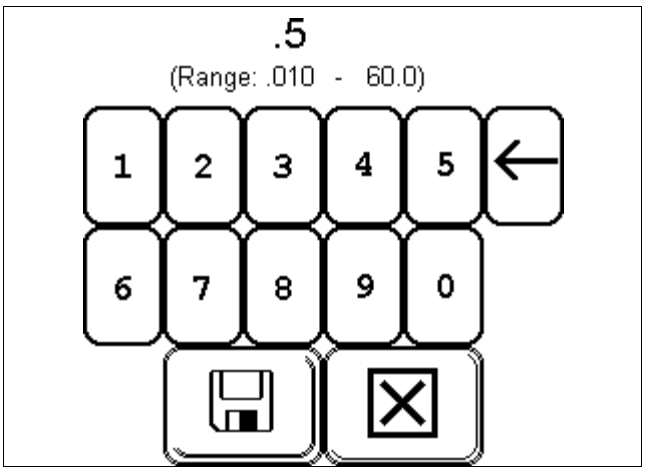
Use this screen to adjust the drills position relative to the honing brush.

- To move the drill position across the face of the brush, adjust the wheel “EDGE”. Use the +X button, to move to the hone brush to the right or the -X button, to move it to the left.
- To adjust the depth the drill travels into the brush, adjust the wheel “FACE” accordingly; use the +Z button, to move drill deeper into the hone brush or the -Z button, to back out of the hone brush.

- After adjustments are entered, touch the “SAVE” button to store the “New” information and transfer you back to the previous screen.
- Selecting “CANCEL” will delete any unsaved data, retrieving the most recently saved information, transferring you back to the previous screen.

Hone Timing Adjustment Screen Selector

- Adjust the length of time the cutting edge is in the honing cycle. Select from .010 up to 60.0 seconds. To produce a larger radius, increase the length of time the cutting edge is in the hone cycle.



Hone Timing Adjustment Screen

- Type in desired seconds of hone time. For more information on “Honing” see page 45
- After hone time is entered, touch the “SAVE” button to store the “New” information and transfer you back to the previous screen.
- Selecting “CANCEL” will delete any unsaved data, retrieving the most recently saved information, transferring you back to the previous screen.

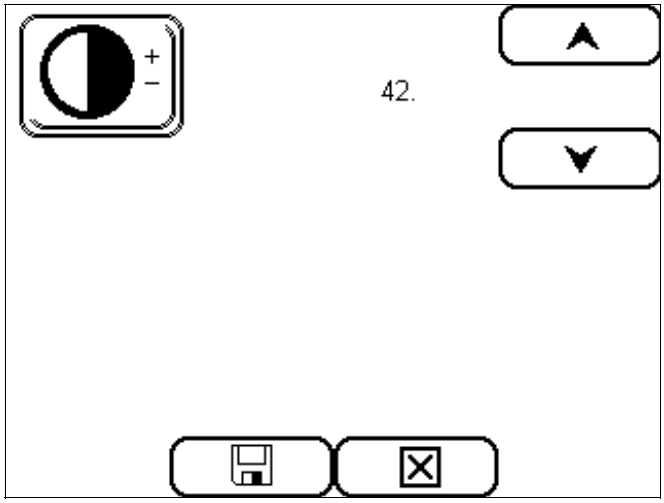
Contrast Adjustment Screen Selector

- Adjust the contrast of the LCD screen. Select 10 as darkest thru 65 as lightest.

NOTE: the factory default is 42

Touch Screen Details

Contrast Adjustment Screen

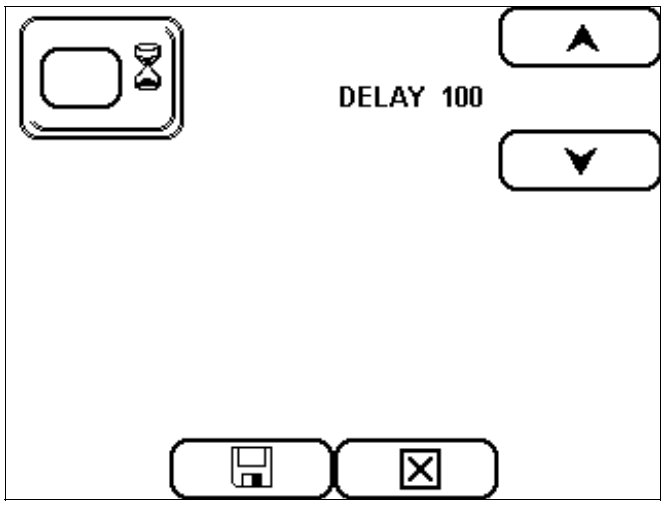


- Adjust screen contrast, using "ARROW UP" to increase the contrast number, making the screen lighter or "ARROW DOWN" button to decrease the number, making the screen darker.
- After adjustment is entered, touch the "SAVE" button to store the "New" information and transfer you back to the previous screen.
- Selecting "CANCEL" will delete any unsaved data, retrieving the most recently saved information, transferring you back to the previous screen.

Touch Key Delay Screen Selector

- Adjust the sensitivity of the touch screen buttons. Select 50 as the most sensitive setting and up to 550, as the least sensitive.

NOTE: Factory default is 200



Touch Key Delay Screen

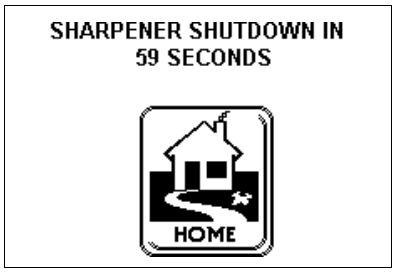
- Adjust Touch Key sensitivity according to your touch, using the "ARROW UP" button will increase the number, decreasing the sensitivity of the touch screen or the "ARROW DOWN" button will increase sensitivity, decreasing the number.
- After adjustment is entered, touch the "SAVE" button to store the "New" information and transfer you back to the previous screen.
- Selecting "CANCEL" will delete any unsaved data, retrieving the most recently saved information, transferring you back to the previous screen.

Cycle Start

- Start the sharpening process by touching "CYCLE START". If machine door is open you will get the Open Door alarm. Close door and press "CYCLE START" to continue.

Cycle Stop

- By touching the "CYCLE STOP" button , you will immediately interrupt the sharpening process; the machine will pause and remain idle. You cannot resume sharpening once the sharpening cycle has been interrupted.



- The Home Screen will appear.
- To abort the sharpening cycle, touch the "HOME" Icon, the sharpening program will be aborted, the grinding motor will shut down and the sharpening fixture will return to its home position.
- If the "HOME" button is not selected, the machine will start a 59 second count down, at the end of the countdown, the sharpening program will then be aborted, the grinding motor will shut down and the sharpening fixture will return to its home position. The Main Set-up Screen will come up.

- After re-chucking the drill, press "CYCLE START". The sharpener has retained the previous set up information.

Why & How to Offset the Radius Split

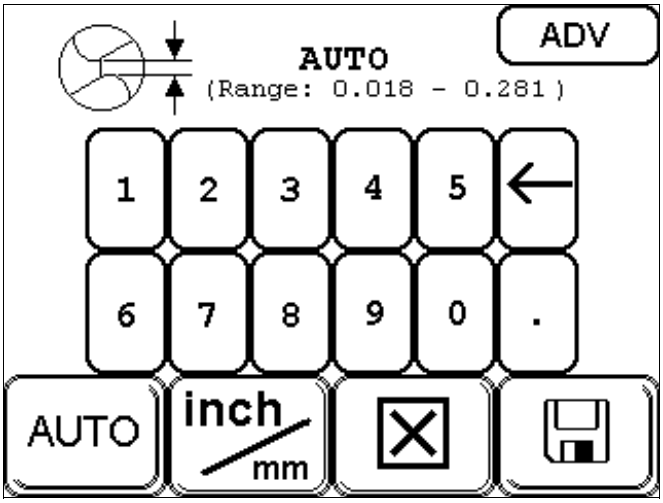
WHY: The Radius Split Offset feature is available and functional only after you have manually entered the web thickness in the Web Diameter Detection screen, located on the Main Screen Set-up page.

- Some drill styles have more of a radius on the split than others. When re-sharpening a drill, you may want to mimic an existing radius split or create even more of a radius. The Offset keypad allows you to change the default-offset value.
- The XPS-16 calculates 30% of the entered web thickness as the radius split offset default.
- To create a smaller radius, enter a larger offset value, or a smaller value to create a larger radius. A value entered of .001 will produce the largest radius possible.

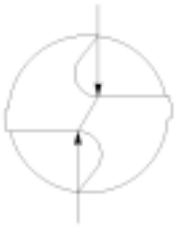
HOW: Touch the Web Thickness button located on main screen.

- The Web Detection Screen will come up.

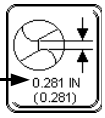
Web Detection Screen



- The web thickness **must** be entered manually. Measure web of drill. Measure web thickness across two points of the chisel line with calipers.



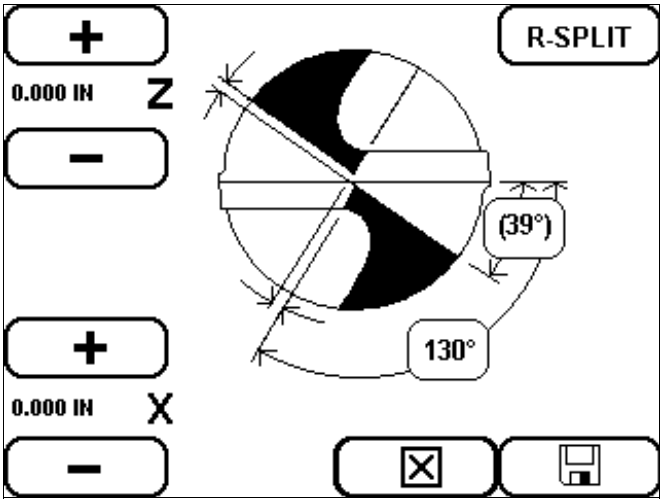
- Type in web thickness.
- Touch the "SAVE" button to store and transfer the "New" information to the Main Set-up Screen. The web thickness entered will appear on the "WEB THICKNESS" Selector button.



- On the **TOOLS, OFFSETS & MAINTENANCE** page, touch the Split Point Offset button.

- The Split Point Offset screen will come up.

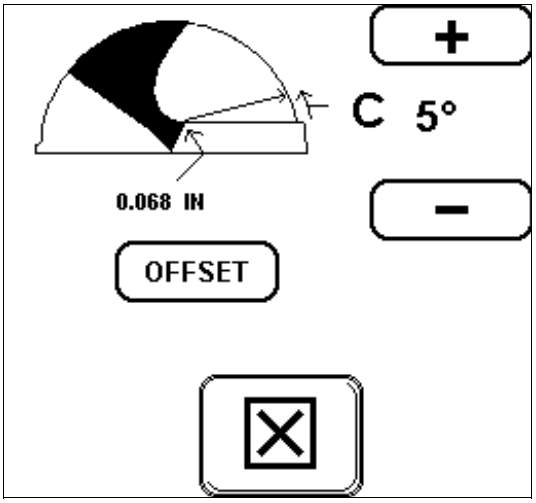
Split Point Offset Screen



If a web thickness diameter has **not** been entered, the R-Split button is not an option and will not appear on the Split Point Offset screen.

- Touch the R-Split button on the Split Point Offset page; the Radius Offset Adjustment Screen will come up.

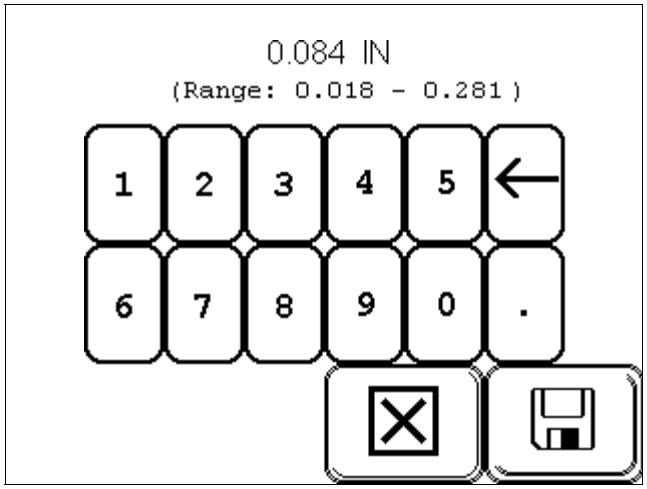
Radius Offset Adjustment Screen



- Touch the OFFSET button; the Radius Offset Keypad will come up.

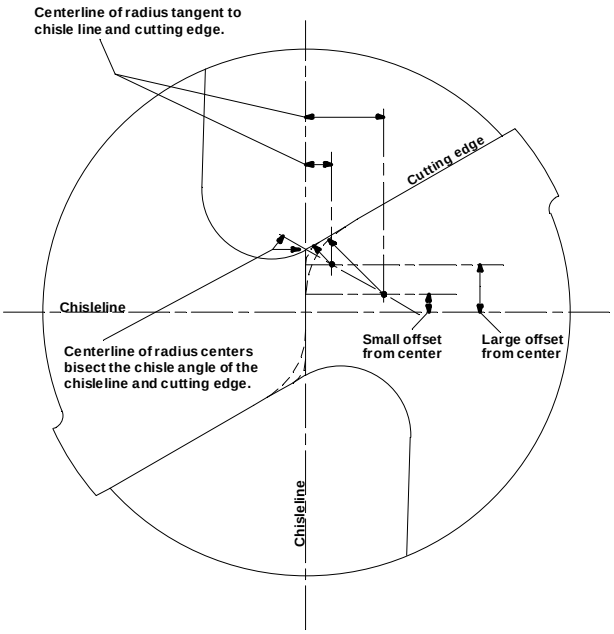
Radius Spilt Offset Screen

Radius Offset Keypad



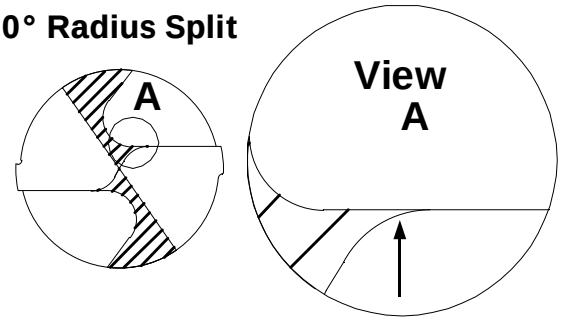
- Type in the offset amount. An offset amount of.001 will produce the largest possible radius. As your offset gets larger the radius will become smaller.

Diagram of radius split showing offset variable. Larger offset creates smaller radius, smaller offset creates larger radius. Offset can be from 1% - 50% of web thickness dimension. Dotted lines indicate large and small radius.


Centerline of radius tangent to chisle line and cutting edge.
Cutting edge
Chisleline
Centerline of radius centers bisect the chisle angle of the chisleline and cutting edge.
Small offset from center
Large offset from center
Chisleline

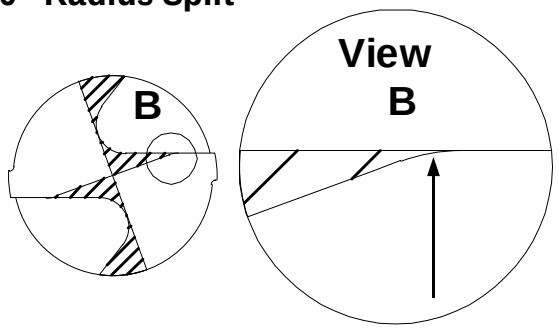
NOTE: It may be more difficult to achieve a larger radius on drills with split angles greater than 120°.

120° Radius Split



The greater split angle, the less apparent the radius. See view B

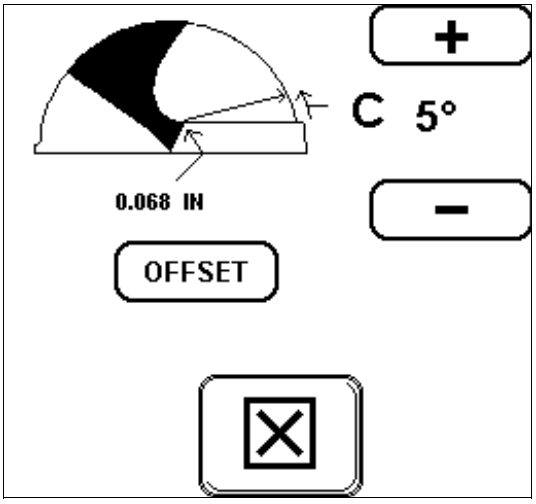
160° Radius Split



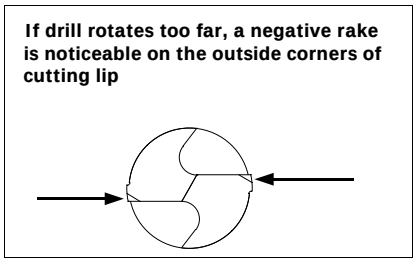
- Touch the “SAVE” button to store the “New” information and transfer you back to the previous screen.

- Selecting “CANCEL” will delete any unsaved data, retrieving the most recently saved information, transferring you back to the previous screen.

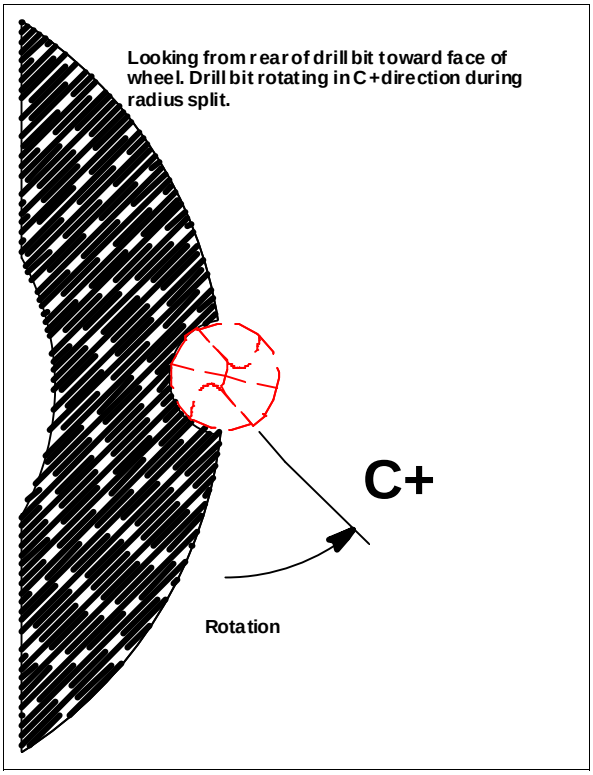
Adjusting The C axis



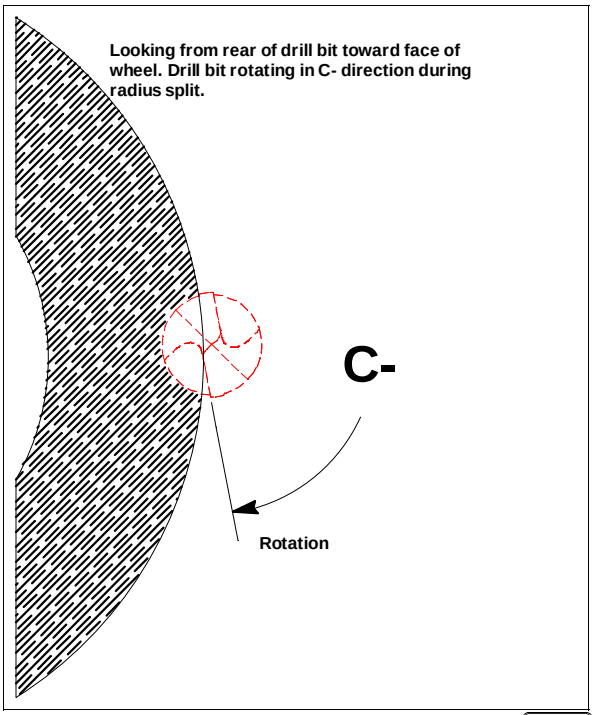
- Adjust the stopping point of the C axis. The factory default is 5°. This will stop the opposite cutting edge of the drill 5° from the grinding wheel. In most cases, adjustment of the C axis will not be necessary. Adjustment is necessary only if the C axis rotates too far into the grinding wheel nicking the cutting edge of the drill.



- The +C button will stop the rotation of the cutting edge further away from the grinding wheel.



The -C button will stop the rotation of the cutting edge closer to the grinding wheel.



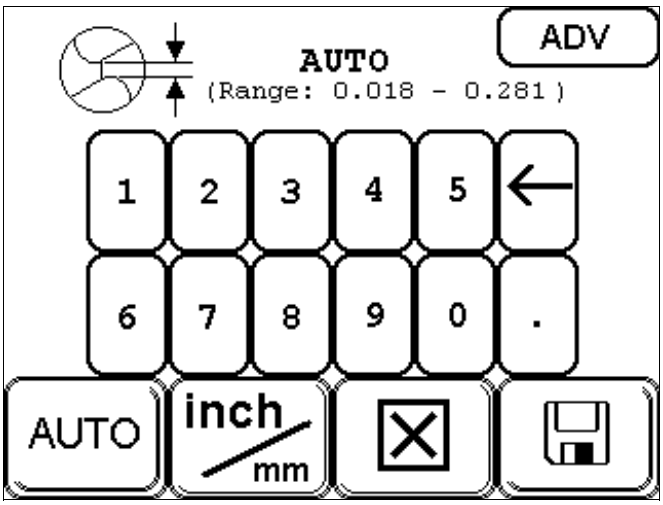
- Touch the “SAVE” button to store the “New” information and transfer you back to the previous screen.

- Selecting “CANCEL” will delete any unsaved data, retrieving the most recently saved information transferring you back to the previous screen.

NOTE: After values have been manually entered into the Web Thickness Screen, you cannot change the point angle, point style or split style. If you do, the values in Web and Advance will be removed. This is to prevent incorrectly sharpening the next drill.

- To disable the R-Split offsets, touch the “AUTO” button, in the manual web detection screen.

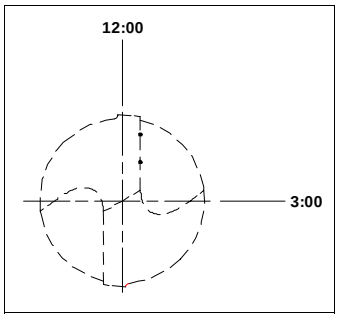
Web Detection Screen



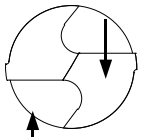
The Radius Split Offset feature will become disabled and you will exit manual web detection mode.

Cutting Edge Advance Screen

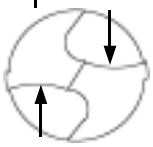
WHY: Your drill is aligned with the aid of a fiber optic sensor. The fiber optic sensor locates and positions the cutting edge up to 12 o'clock. (vertical)



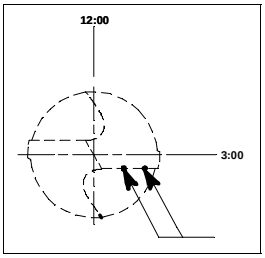
This alignment process was designed for drills with a straight cutting edge.



Drills with a hook in the cutting edge can still be sharpened, but the cutting edge may not align correctly. If this is the case, it may be necessary to manually correct the alignment position, using the Advance feature of the XPS-16.

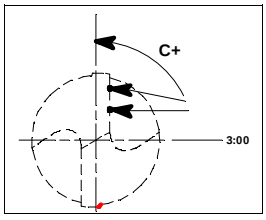


As the drill moves down and in front of the sensor, the sensor moves and positions itself at 55% of the drill diameter. The drill starts to rotate, once the cutting edge breaks the beam of light, it records that point and the sensor then moves to 80% of the drill diameter.



The cutting edge continues to rotate, breaking the beam of light for a second time. The machine recognizes the two detected points as the cutting edge,

THEN,

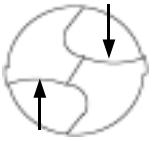


rotates those points up to the 12 o'clock position. (vertical)

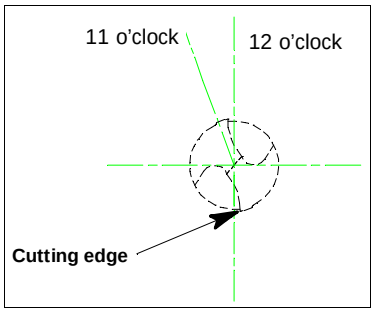
Most times, if the drills cutting edge is straight, the alignment will be correct, and a two-point alignment will successfully position the cutting edge.

BUT:

When the cutting edge of the drill is hooked, the second alignment pick point may be in the radius of the hook.

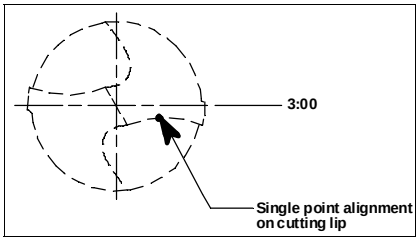


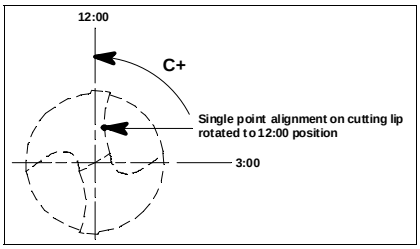
The true cutting edge will not be positioned correctly at 12 o'clock. (vertical)



When you see the alignment is incorrect, touch Cycle Stop and bring the machine back to the home position. You must then compensate for the incorrect alignment using the cutting edge Advance Screen.

When using the Advance screen, the cutting edge will be detected using only a single point detection process. The drills cutting edge will rotate into the beam of light as before, but will only pick one point,

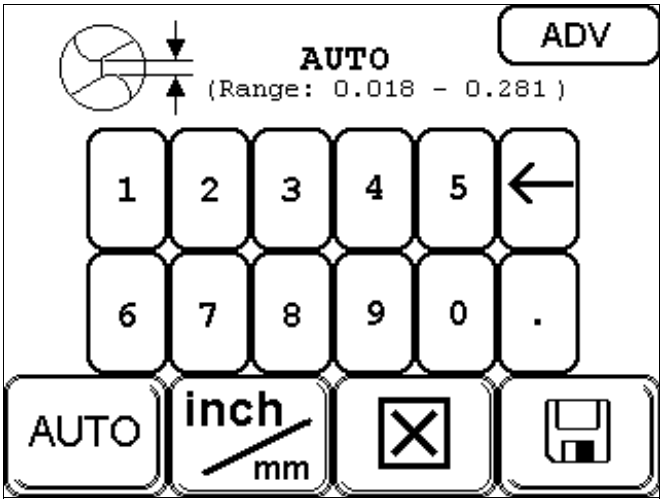




then the cutting edge will rotate up as close to 12 o'clock (vertical) as possible.
At this point, if the cutting edge does not rotate up to 12 o'clock (vertical), you will need to compensate manually.

HOW:

Web Detection Screen



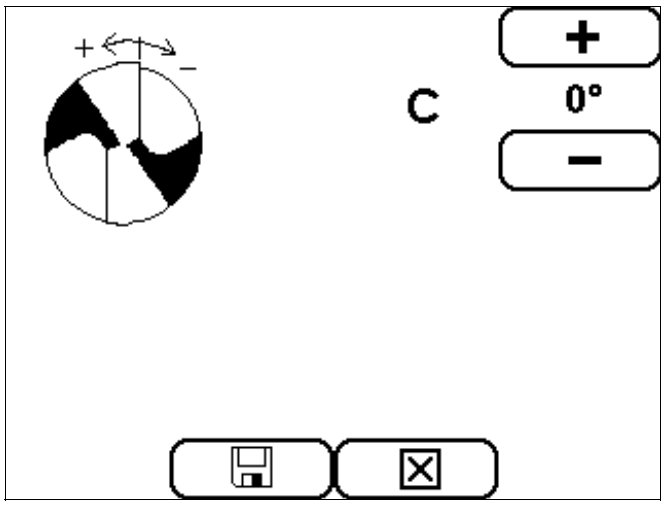
Cutting Edge Advance Screen

The web thickness **must** be entered manually.

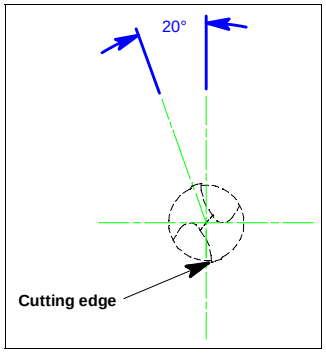
- Measure web of drill, and type in web thickness.
- Touch the ADVANCE button on the web detection screen.

- The ADVANCE screen will come up.

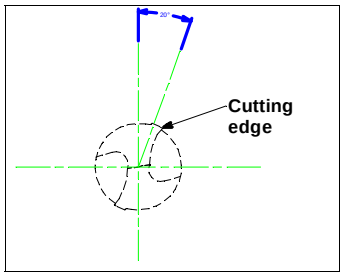
ADVANCE SCREEN



- Press the +C button to rotate cutting edge counter clockwise,

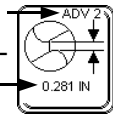


or the -C button to move the cutting edge clockwise.



- A value larger than 0 must be entered to enable the advance feature.

NOTE: Remember, as you look at the pictorial icon of the cutting edge, you are looking at the cutting edge opposite from the direction it will actually rotate.

- Touch the "SAVE" button to store and transfer the "New" information to the Main Set-up Screen. The web thickness and degree of advance entered will appear on the "WEB THICKNESS" Selector button. 

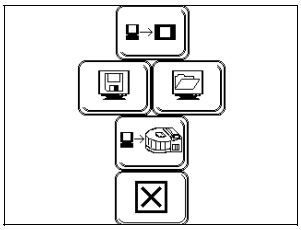
NOTE: After values have been manually entered into the Web and or Advance screen, you cannot change the point angle, point style or split style. If you do, the values in Web and Advance will be removed. This is to prevent incorrectly sharpening a completely different drill.

- To exit manual mode, touch the "AUTO" button, on the number pad. The Radius Split and Advance feature will become disabled.

Download Details

Download Screen Selector

Select this button for in system programming and download capabilities. As upgrades and optional custom point styles become available, your machine is equipped to receive these files from our factory to yours.



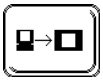
To utilize each of the following screens you will need:

- RS-232 serial port converter with cable connected from PC to XPS-16
- PC located close to XPS-16
- Darex Sloader program must be used to transfer software upgrades and download files.

Software Installation

- Insert the Darex XPS-16 Software Diskette in the A: Drive
- Click on START and then click on RUN
- Type "A:\Install" and press the Enter key. The program will automatically start
- To Run: Click START, PROGRAMS, DAREX and then select DAREX CNC SOFTWARE LOADER

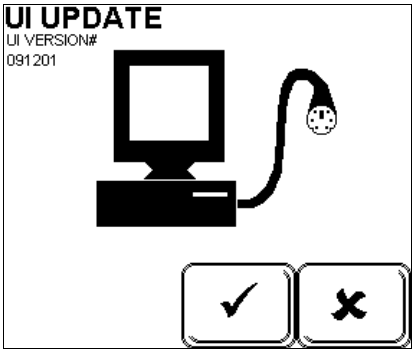
UI (User Interface) Update



UI Update Button – From PC to XPS-16

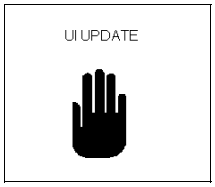
- Make sure Serial Cable is connected from machine to PC.
- Upgrade your USER software by touching the UI Update button.

UI Update Screen



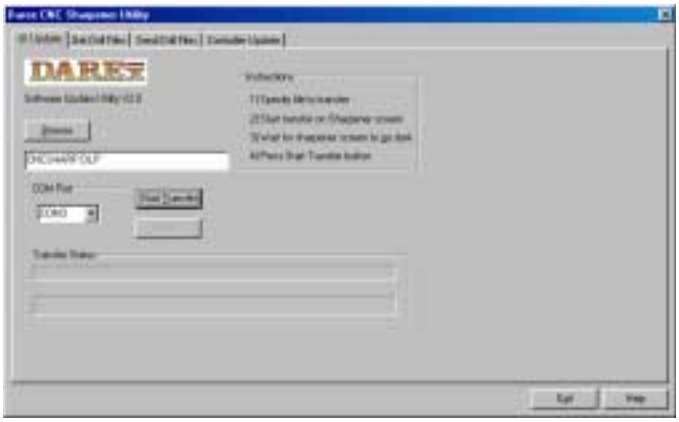
Your current UI software version will be displayed in this screen.

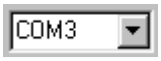
- Touch the "X" to cancel the update process.
- To start UI Update, touch the "check" to continue.
- The UI Update Pause screen will flash on the screen.



- After a few seconds the screen will go dark.
- On your PC, call up the Darex Software Loader program by clicking on START, PROGRAMS, DAREX and then select DAREX CNC SOFTWARE LOADER
- Click on "UI Update" tab.

Darex Software Loader Screen - UI Update



- Click on "Serial Port Settings" drop-down and select the correct COM Port for your computer. 

- Type in file name in Browse field or click on Browse button and navigate to desired file.

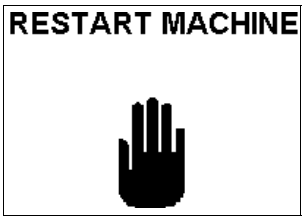
- Click on "Start Transfer"

- In the first line of the Transfer Status Result Box, text will appear displaying current status. The second line will show progress of transfer.

Warning: Do not exit Software Loader Program or power down machine until the Transfer Status reads EXECUTING NEW SOFTWARE.

Download Details

- After transfer is complete, a screen will appear prompting you to shut down machine and restart.

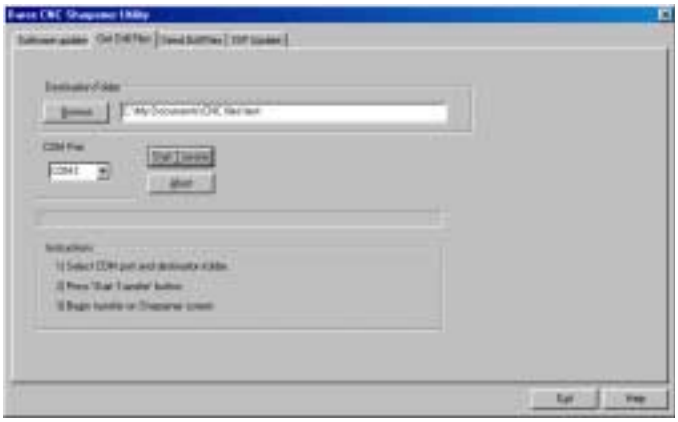


At this point downloading software was successful. Turn the machine off and then on again and run the Initialization program.

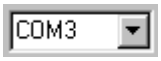
Get Drill Files (Custom File Download)

- On your PC, call up the Darex Software Loader program.
- Click on “Get Drill Files” tab.

Darex Software Loader Screen - Get Drill Files



- Click on “Serial Port Settings” drop down and select the correct COM Port for your computer.



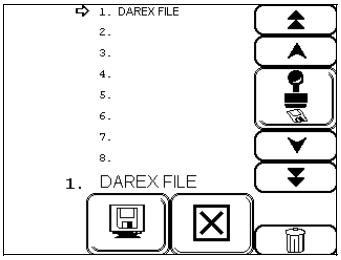
- Type the directory name in the Browse field or click on Browse button and navigate to desired directory.

- Click Start Transfer on computer.

File Down Load Button- From XPS-16 To PC

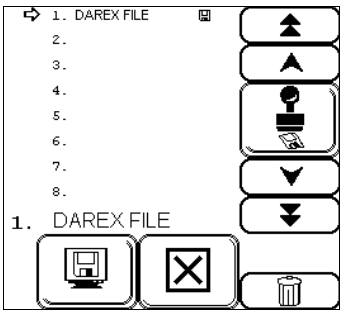
- Connect the serial cable from PC to sharpener.
- Send and store your custom files to your PC by touching the “FILE DOWNLOAD” button.

Save File to PC Screen



The Save File screen will come up.

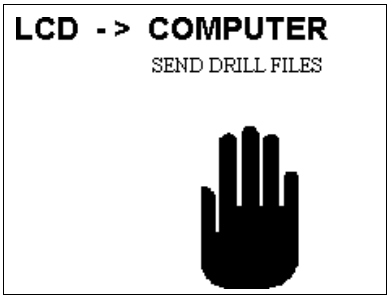
- Using the “CURSOR UP” ( ) or “CURSOR DOWN” ( ) button, move the cursor beside the files you wish to save, touch the “Select File Stamp” button.



- Repeat until all desired files are selected.

- Touch the “SAVE” button. You have approximately 25 seconds between clicking on “SAVE” and clicking the “Start Transfer” button. If time exceeds 25 seconds an error will appear and you must start over.

Sending Drill Files Screen



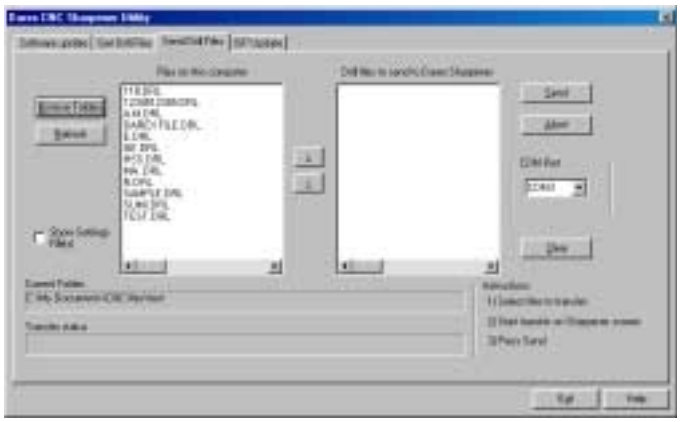
The Send Files Screen will flash on the XPS-16 screen.

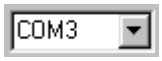
Send Drill Files (File Restoration)

File Restoration Button - From PC To XPS-16

- Connect the serial cable from PC to sharpener.
- Restore saved custom files from your PC by touching the “File Restoration” button.
- On your PC, call up the Darex Software Loader program.
- Click on “Send Drill Files” tab

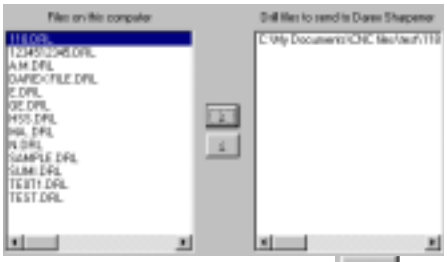
Darex Software Loader Screen - Send Drill Files



- Click on “Serial Port Settings” drop down and select the correct COM Port for your computer. 

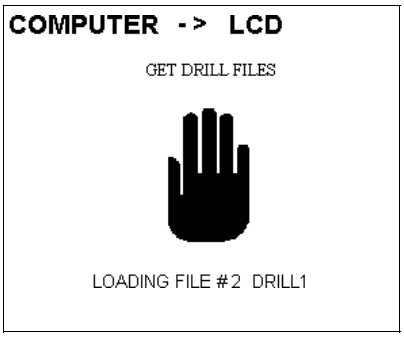
- Click on Browse Folders to navigate to desired directory.

- Drill files to be sent will be displayed in the left column of the “Send Drill Files” Down Load Screen.
- The files you wish to restore need to be transferred to the column on the right.

- Select the file you wish to restore by highlighting the file. 
- Click on the top Transfer Icon located between the two columns.
- Once all the necessary files are transferred to the column on the right, you are ready to start downloading to your XPS-16.
- Click the “SEND” button on the computer.

- Touch the “RESTORATION” button on the XPS-16.

Getting Drill Files

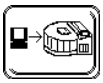


The “Getting Drill Files” Screen will flash on the XPS-16 screen.

The transfer will begin and when completed the Transfer status will display the number of files transferred.

You have approximately 25 seconds between clicking on the “RESTORATION” button and clicking the “SEND” button. If time exceeds 25 seconds an error will appear and you must start over.

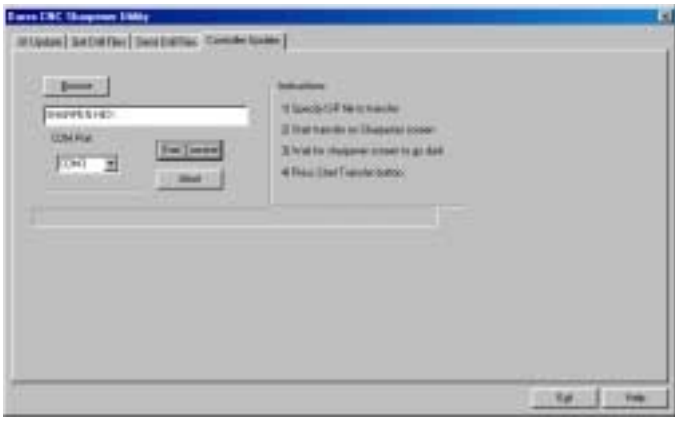
Controller Update

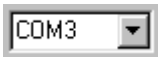


Controller Update Button - From PC to XPS-16

- Connect the serial cable from PC to sharpener.
- Update your Controller software by touching the Controller Update button.
- On your PC, call up the Darex Software Loader program.
- Click on “Controller Update” tab

Darex Software Loader Screen – Controller Update

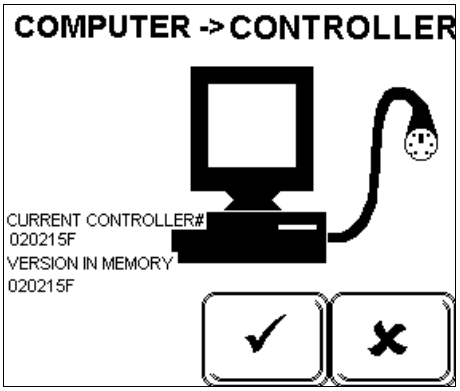


- Click on “Serial Port Settings” dropdown and select the correct COM Port for your computer. 

- Locate file name in Browse field or type in file name.

- Touch the Controller Update button on your XPS-16.

Controller Update Screen



The “Controller Update” screen will come up.

Your current Controller version will be displayed on this screen.

- Touch the “X” to cancel the Controller Update process.
- Touch the “check” to start the Controller Update.

The Controller Update screen will flash on the screen and then the LCD screen will go dark.

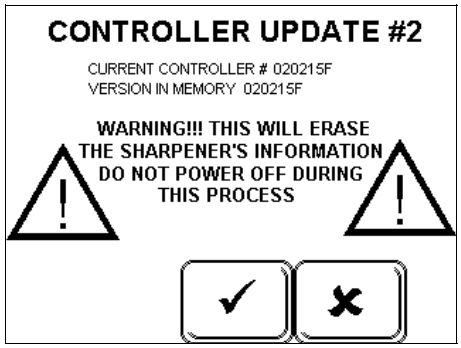
- Click “Start Transfer” on computer. You have approximately 25 seconds between clicking on the “Controller Update” button and clicking the “Start Transfer” button. If time exceeds 25 seconds an error will appear and you must start over.

Warning: Do not exit Software Loader Program or power down machine until the download process is complete.

- The LCD screen will come back up and the download progress will be displayed on the LCD.

- Once the LCD displays 100% complete, the 2nd part of the Controller Update must be completed.
- The screen to complete the Controller Update will come up.

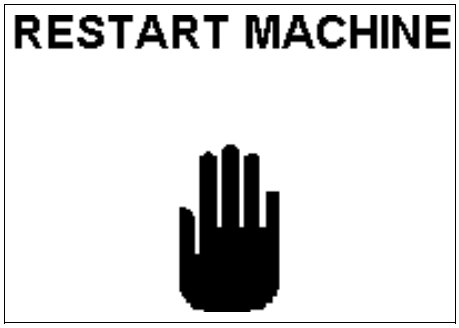
Controller Update Screen Part 2



- Touch the “check” to complete the Controller Update.

Warning: Do not power down machine until the download process is complete.

- The LCD screen will display the download progress. Once the LCD displays 100% complete this download is complete, your controller has been updated



- After transfer is complete, the RESTART MACHINE SCREEN will appear
- Turn the machine off and then on again and run the Initialization program.

CHUCK INFORMATION

XPS-16 CHUCK

The XPS-16 6-jaw chuck system was designed with accuracy and simplicity in mind. As a result, the XPS-16 chuck allows you to quickly change from the largest drill diameter to the smallest in seconds. The accuracy of the chuck will produce drill concentricity exceeding ANSI, NAS 907 & & ISO 10899 standards. The chuck holds drills from .118 to .629 (3mm to 16mm).

NOTE: Be careful when chucking up carbide drills. Center the drill in the jaws as you tighten the chuck. It is helpful to rotate the drill as you close the chuck. Be careful not to over tighten the chuck on small drills.

Caution: When sharpening a 5/8 drill make sure the drill is secure after tightening the chuck.

Morse Taper drills:

To secure a Morse Taper drill in the chuck, it is necessary for the drill to have a minimum flute length of 3.500 inches. The taper will then be free from the grasp of the jaws, eliminating interference with the larger tapered shank. The other option for holding these types of drills is a split bushing. Bush the body of the drill up to, or larger than, the interfering diameter. Any drill held in a bushing will need to be sharpened on Manual Mode in the “Diameter Selector” screen . You must type in the actual body diameter of the drill to be sharpened, regardless of the shank or bushing size.

Step drills:

In the case of a Step drill, you can sharpen the pilot of that drill but it must be sharpened on Manual Mode in the “Diameter Selector” screen. Type in the diameter of the pilot to be sharpened, regardless of the shank size.

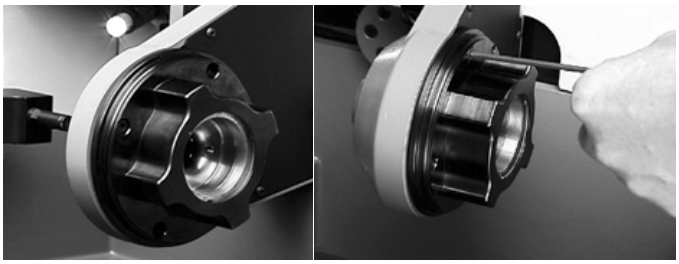
End Mill shank drills:

Typically, an End Mill shank drill has a shank diameter larger than the body of the drill.
Many End Mill shank drills can be sharpened on the XPS-16, depending on the length of the flute verses the length of the shank. If holding these types of drills on the shank they must be sharpened on Manual Mode in the “Diameter Selector” screen .

CHUCK JAW DISASSEMBLY/ ASSEMBLY & MAINTENANCE

The vacuum system that comes with your sharpener will help reduce the amount of maintenance necessary, however, periodically the Chuck Jaw Spindle Insert assembly should be removed and any grinding residue brushed away.

1. Push the emergency stop button, unplug unit from power supply and use a “LOCK OUT” “TAG OUT” procedure.
2. Using the chuck knob, open chuck jaw assembly to its fully open capacity range.
3. Using a 3mm hex key, remove the 4; 4mm Allen head cap screws from the chuck knob.



4. The chuck jaw assembly can now be removed through the back of the chuck spindle assembly.

5. Brush or blow away any grinding residue.
6. Unthread the brass, Jaw Spring Retainer assembly from the chuck knob. Clean external threads on brass and internal threads in chuck knob thoroughly.

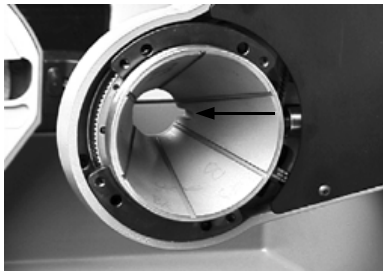
Make sure locating dots are in alignment, after threading the jaw retainer back into the chuck knob. If so, unthread brass retainer and rotate 180°, rethread into chuck knob.

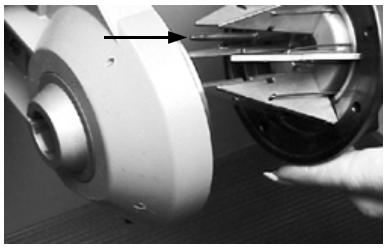
NOTE: Do not remove jaws from chuck jaw spindle insert; the concentricity of the chuck will be compromised.

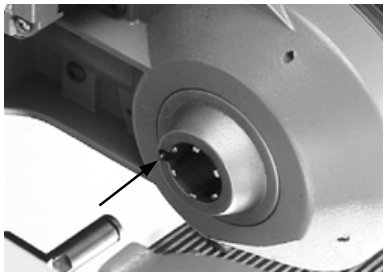
Chuck Information

TO REINSTALL:

Reinstall in reverse order, making sure the diameter detector rod is oriented in spindle correctly.



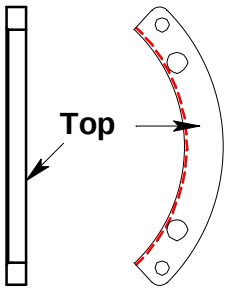




CAUTION: If diameter detector rod is reinstalled improperly, damage to rod will occur.

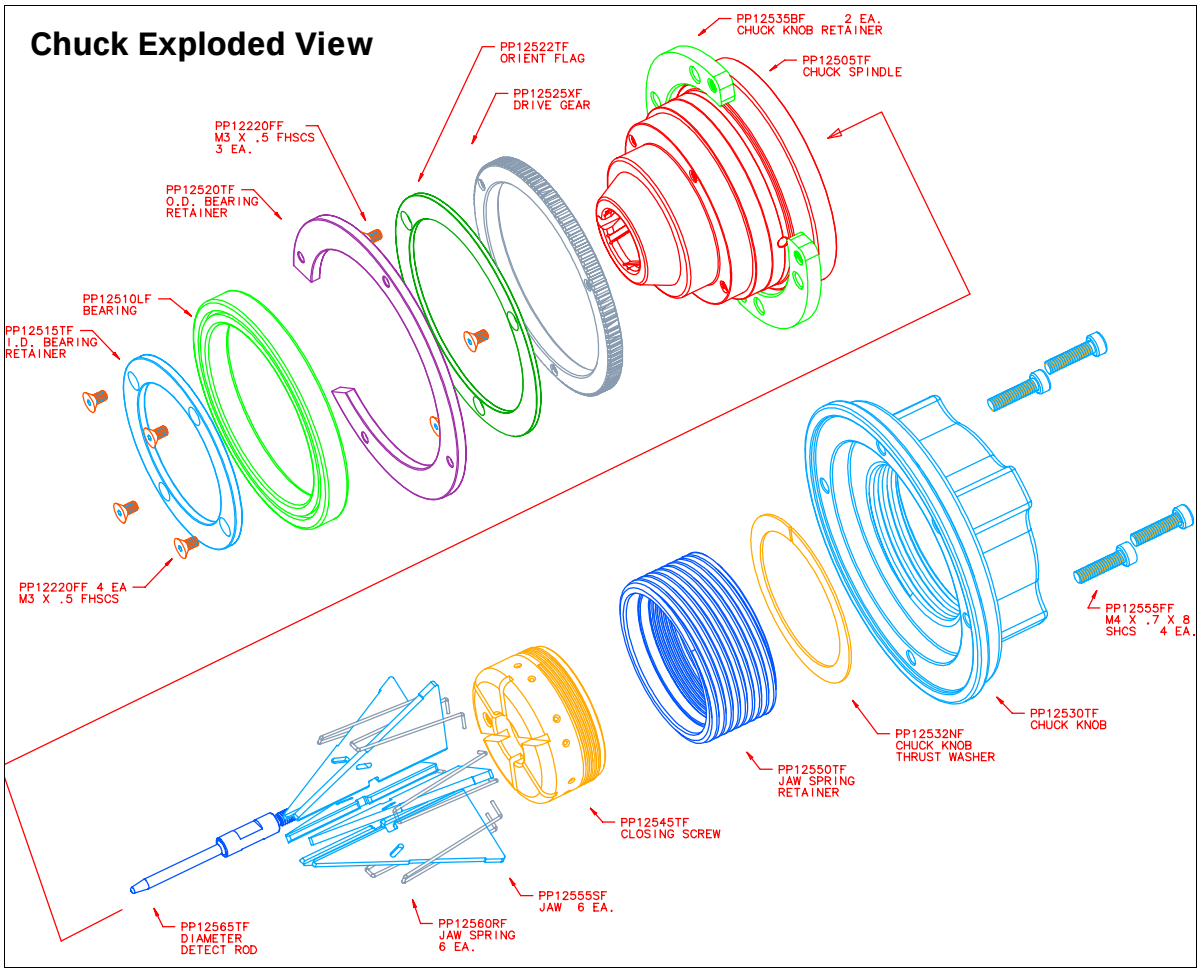
- After chuck jaw assembly is properly replaced and before the 4; 4mm bolts are in place, open or close the chuck knob until the bolt hole pattern on the chuck knob is in alignment with the bolt hole pattern on each of the chuck knob retainers.
- Make sure the bevel on the retainers is toward the chuck knob.

Chuck knob retainer showing bevel



The position of the chuck knob retainers may need to be raised or lowered to meet the bolt hole pattern on the chuck knob. Carefully insert bolts and tighten.

Chuck Exploded View



HONING BRUSHES AND INFORMATION

HONING ON YOUR XPS-16

Your sharpener is equipped with “honing” capabilities. Edge prepping is done a number of different ways, in the case of your XPS-16 sharpener it is achieved by brush honing. The hone brush is bolted to the center of the diamond-grinding wheel. The bristles of the nylon brush are impregnated with silicon carbide crystals.

When the hone feature is selected and the drill has finished the sharpening cycle, the drill moves over into the honing position.

With the cutting edge perpendicular, the drill feeds into the honing brush, pausing as the bristles lap over the cutting edge, creating a radius. This method creates what is known as a waterfall-shaped hone, the edge prep is skewed toward the topside of the tool. The main benefit of this type of hone is that the honing process leaves more tool material directly under the cutting edge, further strengthening the corner. The longer the cutting edge remains paused in the brush the larger the radius. To change the size of the radius, adjust the length of time the drill is in the hone cycle. Your options for the time in the hone range from .010 to 60.0, for Hone Time Adjustment refer to information on page 29.

WHY HONE?

A carbide cutting tool’s edge must withstand tremendous stress. It’s ability to handle the applied stress and wear in a slow predictable manner determines a tool’s life and wear rate. In certain applications, proper edge preparation known as “honing” has improved tool life 200 percent or more.

The primary purpose of honing is to establish an edge between the tool and the work piece. Chip flow, cutting speed, in-feed pressure and other machining variables are strongly impacted by the characteristics of this edge. The size and shape of the hone determine the amount of tool pressure required for a machining operation to be successful. If the hone is too large for a given application, the excessive pressure required to cut will increase the amount of heat developed during machining. That shortens tool life. If the hone is too small, the cutting tool edge will be weak and unable to withstand cutting pressures. 0.001 to 0.003 is the size of most radius created by edge honing.

BENEFITS TO HONING CARBIDE

Longer Tool Life: improve the wear rate by reducing the stress to the tools cutting edge.
Greater Consistency: you can achieve predictable tool performance, increased productivity, reducing scrap and less rework.
Better Finish: a smooth edge helps reduce the tendency of chipping on the cutting edge. These chips create an inconsistent edge that degrades the finish and shortens tool life.

***NOTE: If the edge hone is incorrectly sized or insufficiently smooth, small work piece particles can attach to the cutting edge. As this buildup continues, more and more material will attach to the tool, adversely affecting the surface finish.**

HONE ONLY feature

Use this feature when regrinding is not necessary or desired. This option allows you to use your XPS-16 as a honing machine. When HONE ONLY is selected the grind and split process will be disabled. The diameter of the drill will still be detected but from that point on it will move directly into the honing position and continue to hone the drill.

HONING BRUSH MAINTENANCE

Clean the hone brush each time you clean the diamond grinding wheel. Remove the hone brush from the grinding wheel and clean using hot soapy water.

HONING BRUSH PART #'S

SA12680NA – Brush, Retainer & Bolts
PP12680NF – Brush 180 Grit – Coarse
PP12682TF – Brush Retainer
PP12252FF – Bolts 3 each (4mm .7x18 SHCS)

HOW TO CHANGE HONING BRUSH

This can be done, leaving grinding wheel mounted.

1. Push the emergency stop button, unplug unit from power supply and use a "LOCK OUT" "TAG OUT" procedure.
2. Using a 2.5mm hex key, remove the top 2, 3mm button head cap screws from wheel guard cover.
3. Then, loosen, but do not remove the bottom 2, 3mm button head cap screws. pull wheel guard cover away from wheel.

NOTE: Leave vacuum tube attached to wheel guard cover

4. Using a 3mm hex key wrench, remove the 3, 4mm 7x18 SHCS .
5. Remove retainer ring.
6. Remove brush from wheel.

To reinstall, reverse steps.

VACUUM SYSTEM AND INSTALLATION INSTRUCTIONS

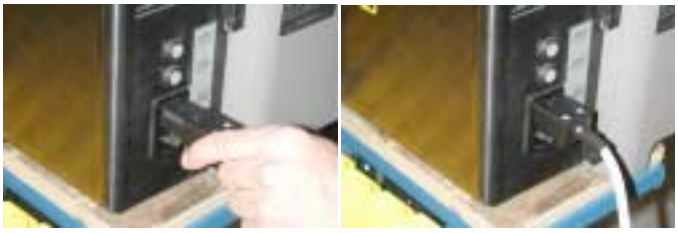
Do not use sharpener until vacuum system is connected to machine. The airflow from the vacuum system keeps the grinding wheel & motor cool while running. Damage to the motor may occur if vacuum is not running while sharpening on the XPS-16.

XPS-16 VACUUM SYSTEM

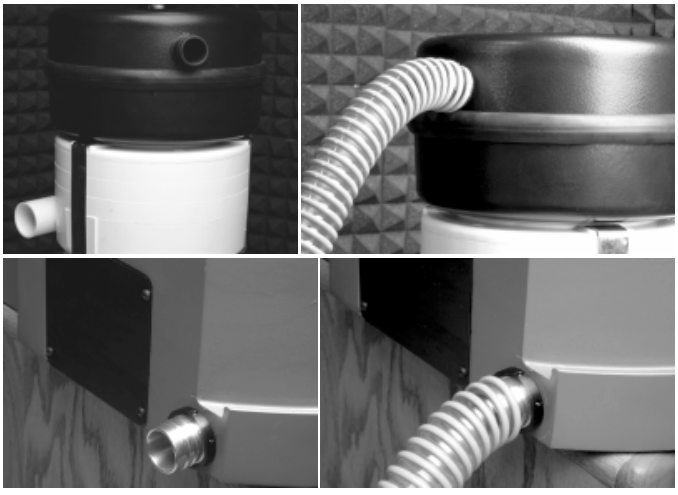
The XPS-16 sharpener comes equipped with an environmentally safe dust collection system. Hook up the vacuum to your sharpener before sharpening drills.

HOW TO HOOK UP VACUUM SYSTEM

1. Connect plug from vacuum to the receptacle on the electrical panel located at the back of the XPS-16 sharpener.



2. Connect Vacuum hose to the vacuum adapter tube on the sharpener and to the intake tube on the vacuum.



VACUUM SYSTEM DISASSEMBLY & MAINTENANCE

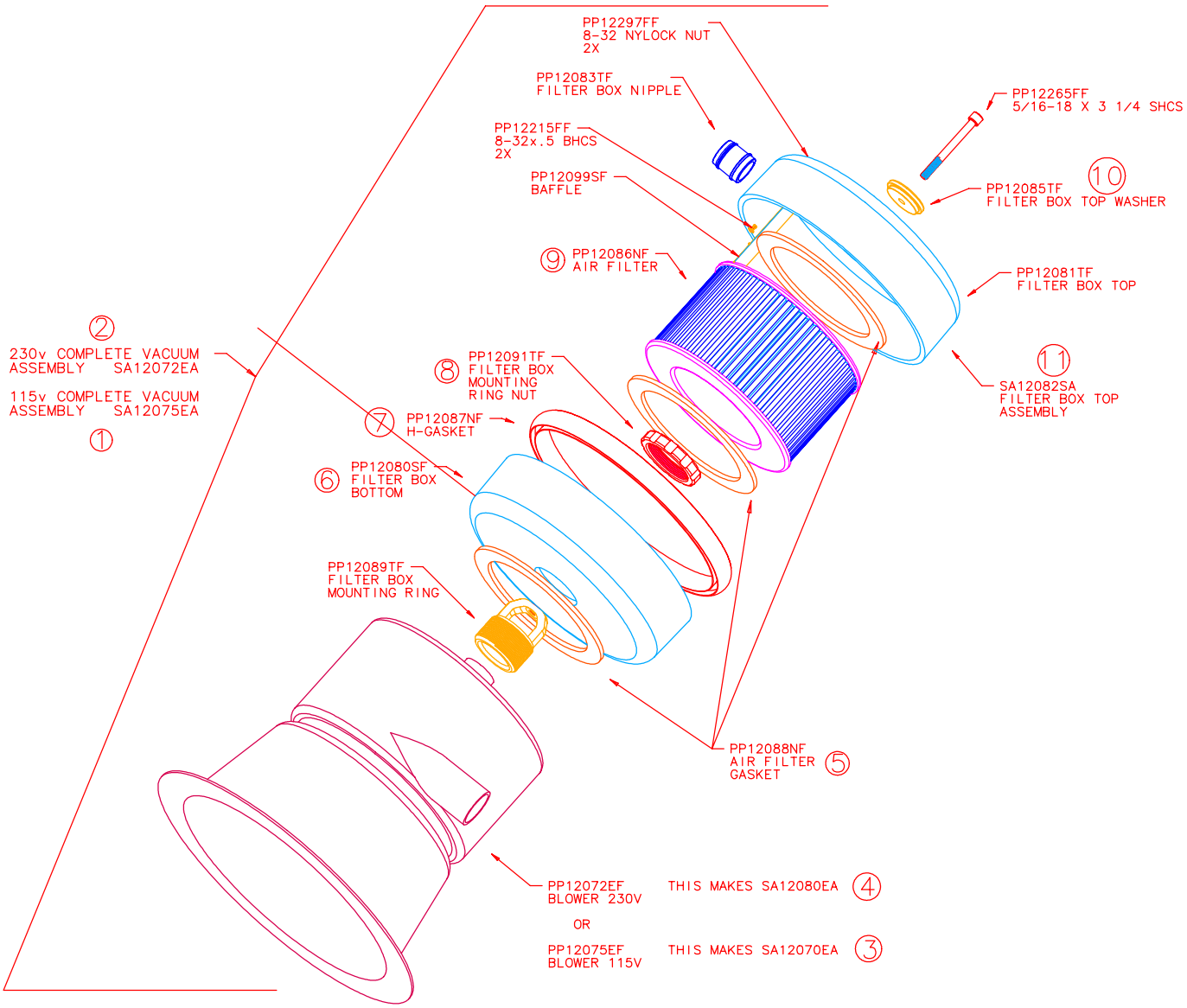
1. Using a ¼ hex key wrench, remove bolt and washer.
2. Remove top ½ cover of vacuum canister.
3. Remove and dispose of filter cartridge.
4. Unthread plastic nut retaining bottom ½ of vacuum canister.
5. Remove bottom ½ of vacuum canister.
6. Clean out residual grinding dust from bottom of canister.

To reassemble, reverse steps.

NOTE: When reassembling, make sure the rim of the top ½ of vacuum canister is seated into gasket channel on bottom ½ of vacuum canister.

Vacuum System Information

Vacuum parts list & exploded view on page 69.



VACUUM SPECS
Weight: 30lbs (13.61kg)
Diameter: 14” (35.56cm)
Height: 19” (48.26cm)

XPS-16 WHEEL INFORMATION

The Darex XPS-16 comes equipped with electro-plated, 150 Grit CBN (Cubic Boron Nitride) and 220 Grit diamond grinding wheels. The CBN wheel comes installed on your sharpener, ready to sharpen HSS and Cobalt drills. The diamond grinding wheel, for grinding carbide drills, has a honing brush mounted to it. You will find the diamond wheel packaged with the vacuum.

Sharpening with an electroplated CBN (Cubic Boron Nitride) or diamond grinding wheel reduces grinding cost and improves quality of the finished product. These results are obtained because the grinding material is super abrasive. The CBN is second only to diamond in hardness. In fact, CBN has twice the hardness and four times the abrasion resistance of an aluminum oxide grinding wheel. The CBN and diamond wheel last longer; the grinding process is faster and less grinding time is lost due to wheel breakdown & maintenance.

WHEEL MAINTENANCE

These wheels are maintenance free from truing and dressing but will need to be cleaned periodically. **After removing the wheel from the sharpener**, saturate the wheel with any type of oil-less solvent, such as Automotive Brake Cleaner. It is helpful to use a soft bristle brush and lightly brush the saturated wheel loosening the impacted grinding particles. Re-saturate the wheel to flush out any loosened debris.
NOTE: If after cleaning wheel, the drills still discolor or burn, the wheel life may be exhausted and the wheel will need to be replaced.

WHEEL PART #'S

- PP12660GF – 150-grit CBN grinding wheel
- PP12666GF – 220-grit Diamond grinding wheel
- PP12675GF – 320-grit Diamond grinding wheel
  (Not recommended for larger drills)
- PP12670TF – Wheel retainer bolt
- Proprietary Wheel – Diameter is 4.500 - Width is 1.025

***Darex Corporation does not re-plate or recommend re-plating the grinding wheels. For replacement wheels, contact your Darex distributor or Darex Corporation.**

HOW TO CHANGE A WHEEL

1. Push the emergency stop button, unplug unit from power supply and use a "LOCK OUT" "TAG OUT" procedure.
2. Remove Guard door
3. Using a 2.5 mm hex key wrench, remove top 2; 3mm button head cap screws from wheel guard cover.
4. Loosen, but do not remove the bottom 2 screws. Pull the wheel guard cover away from wheel, leaving the vacuum tube attached.

5. Insert spindle lock pin through access hole located on top of wheel guard casting.

6. Rotate spindle until spindle lock pin engages.

7. Using a ½ inch socket wrench, loosen wheel retainer bolt in the counterclockwise direction until wheel is free of the spindle.

8. Repeat steps in reverse to install new wheel.

When changing from a CBN to Diamond or vise versa, it's a good idea to write the wheel offsets on the back of the wheel before adjusting the offsets to the new wheel.

Recalibrate Material Take Off

- After a wheel change, verify and/or recalibrate Material Take Off:

1. Use a 3/8 HSS standard twist drill, measure the length of drill before sharpening.
2. Using the Darex #1 File sharpen the drill.
3. After sharpening the drill, measure the drills new length. MTO should be approximately .005-.007.
4. If incorrect, adjust using **Grinding Wheel Offset Screen Selector** Refer to information on page 26

Sharpening Tips

1. Use MIN MTO when touching up your facet and conic ground drills.

2. Use MID MTO when sharpening chipped facet and conic ground drills.

3. Use MAX when changing point angles on conic ground drills only.

4. If your drill has a broken or highly misshaped geometry, you will want to rough grind on another machine first.

5. If your drill has one cutting edge grossly longer that the other, when you insert the drill into the chuck, position the longest side down. The sensor will detect the most protruding edge and adjust its grind accordingly.

6. If you enter a drill diameter size outside the capability range of the sharpener, the setting will default to the closest MIN/MAX diameter size.

7. To make wheel changes faster, using a permanent marker, write the X & Z wheel offset values on the back of the wheel. After each wheel change, type in the offset from the back of that wheel.

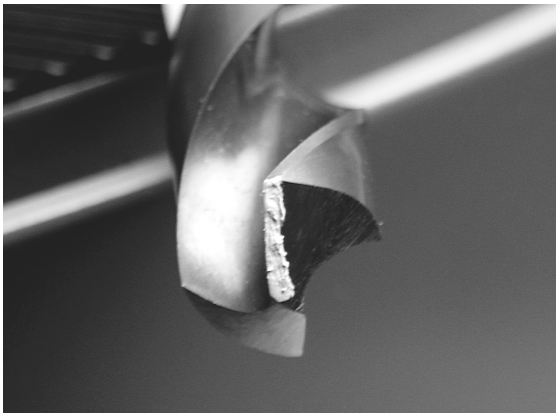
8. To extend the life of and improve the performance of your wheel, clean each new wheel before using. For wheel cleaning instructions Refer to information on page 49.

9. To adjust the parallelism of the facets, rotate the cutting edge using the Advance button. For more information Refer to page 35.

10. Each time the XPS-16 is powered up, it defaults to the Darex File and reloads all default offset values.

11. Make sure each time you power down the XPS-16, you save your work, just as you would on a PC. To save or create a file, Refer to information on pages 23 & 24

12. If the XPS is having trouble picking up the drills cutting edge, paint just behind the cutting lip, using white correction fluid such as Bic Wite-out. Because the fiber optic sensor works from reflectivity, the color of the drill may interfere with the alignment. Drills Black and Gold in color, are the biggest culprits. Painting just behind the cutting edge will help the sensor locate the cutting edge.



13. For a thick webbed drill, mark inside the flute using a black marker. Paint just under, and right up to, but not touching the cutting edge.

14. To increase the hone on the cutting edge of the drill, increase the length of time the drill is in the honing cycle.

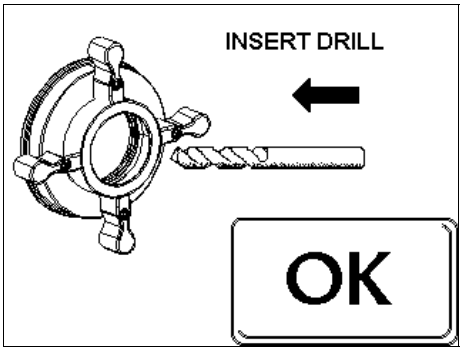
15. If your drill has a thin web, we do not recommend sharpening it as a facet point style. The width of the primary facet produced will be very thin.

16. Be careful when chucking up carbide drills. Center the drill in the jaws as you tighten the chuck. It is helpful to rotate the drill as you tighten down the chuck. Be careful not to over tighten the chuck on small drills.

17. You can influence the size of the radius created on an R-Split drill. Measure web of drill. Enter a web thickness value smaller than the drills actual web diameter. Watch the C Axis rotation, it will automatically advance the drill in the + direction and could nick the opposite cutting edge. Adjust the C Axis rotation in the minus direction. For more details see page 33.

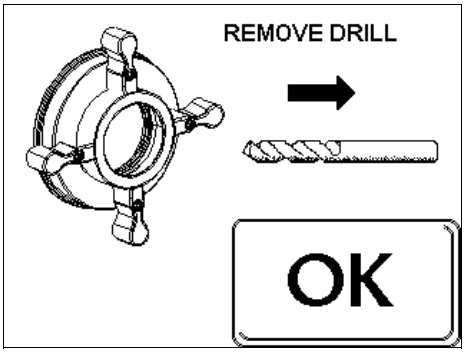
Trouble Shooting Icons

Insert Drill Alarm



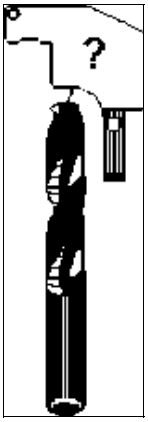
- No drill has been detected Insert drill or check to see if drill is loose and has pushed back in the chuck

Remove Drill Alarm

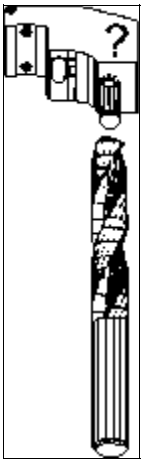


- Drill has been left in chuck during Self Test Initialization program and before machine goes into the Lube cycle. Remove the drill from the chuck

Cutting Edge Detection Alarm

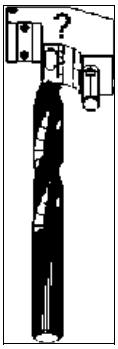


- If cutting edge is not detected within one full revolution you will see this alarm. For more information see page 55.



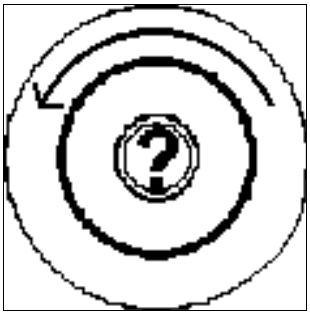
Material Take Off Alarm #1

- Drill not pushed up against the stop.
- To trip the limit switch, reset drill, pushing the tip into the stop while tightening the chuck.
- MTO sensor failed, contact factory.



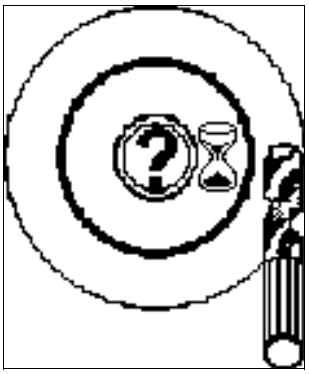
Material Take Off Alarm #2

- MTO sensor failed, contact factory.



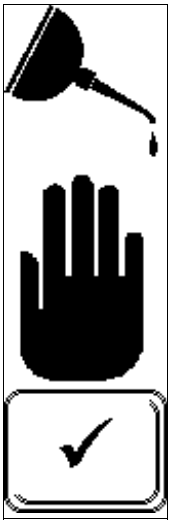
Grind Motor Error

- The grind motor fuse is blown.
- No grind motor current sensed.



Time Out Error

- In the grinding process too long. Clean or replace grinding wheel.

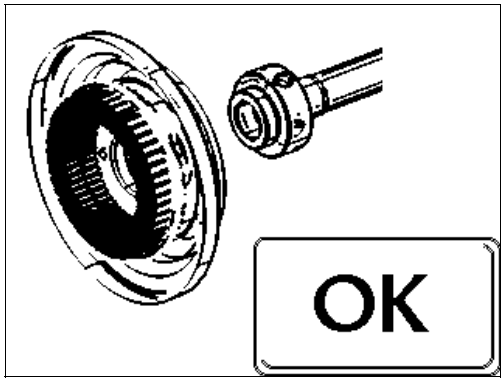


Oil Lubrication Screen

- Self-lubrication cycle necessary Refer to information on page 65 for details.

Trouble Shooting Section

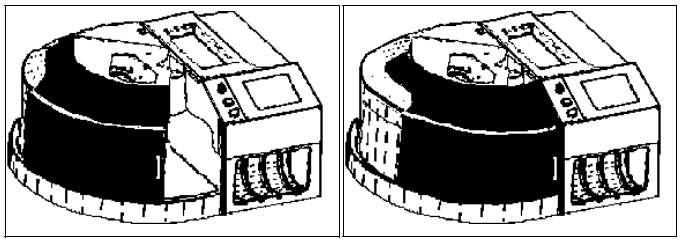
Wheel Change Reminder



- This reminder will prompt you to change the wheel as you select different drill material options.

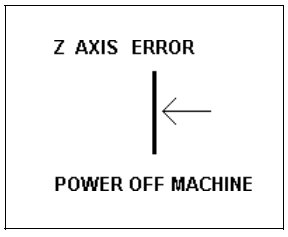
The XPS-16 does not know what type of wheel you have mounted; you must mount a CBN wheel for HSS or Cobalt drills and a Diamond wheel for Carbide drills. Failure to comply will damage or shorten the life of your grinding wheel.

Door Open error



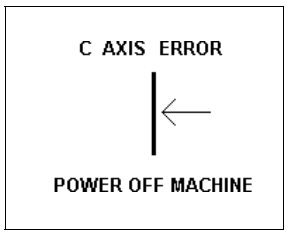
- Machine door must be closed when "Cycle Start" button is pressed. After closing door, push cycle start to continue grinding.

Z AXIS ALARM



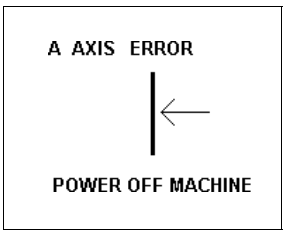
- Z axis has moved past the limit switch. Call Darex
- Z axis sensor has failed.

C AXIS ALARM



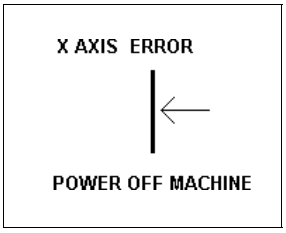
- C axis sensor has failed.

A AXIS ALARM



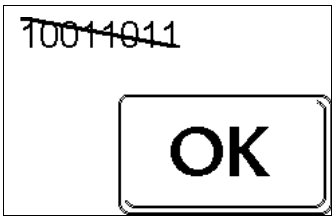
- A axis has moved past the limit switch.
- A axis sensor has failed.

X AXIS ALARM

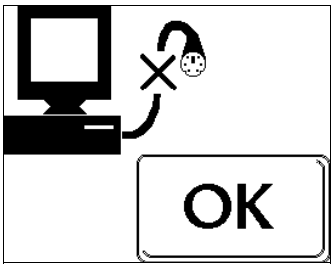


- X axis has moved past the limit switch. Call Darex
- X axis sensor has failed.

BAD CODE ERROR



- Bad controller code stored in memory.



- XPS-16 waited too long before receiving a response from the computer.

Trouble Shooting—XPS-16

Symptom

Machine won't power up

Cause

- No power at outlet
- Make sure power cord is plugged in to machine and outlet
- Release E-stop button
- E-stop nut is loose and stuck down in the off position
- On/Off switch need replaced
- Wiring lead disconnected

Symptom

After powering up, Initialization screen does not come up

Cause

- RS232 cable is disconnected

Symptom

Failed Initialization screen test

Cause

- Axis driver card failure
- Limit sensors bad
- Solenoid bad
- Machine has moved past the limit switches

Symptom

LCD screen too light or dark to read

Cause

- Contrast needs adjusted Refer to page 30
- LCD back light failure
- LCD bad

Symptom

LCD screen displays garbage or grossly inaccurate information.

Cause

- Machine temperature is too cold/hot – do not operate until machine temperature reaches above 7°C (45°F) but not more than 32°C (90° F)
- Restore calibrations from locked area
- LCD battery is dead
- LCD is bad

Symptom

After pressing "Cycle Start" the machine does not move into the sharpening cycle

Cause

- Make sure drill has been loaded properly and sensor button has been depressed
- Close door
- Software has caused machine to hang up – turn machine off and then on again
- Cycle start switch needs replacement
- Printed circuit board on back of LCD is bad

Symptom

Drill rotates in front of fiber optic sensor failing to locate cutting edge

Cause

- Old software installed
- Drill diameter is smaller than 3mm
- Drill diameter is of a smaller dimension with a thick web
- Color of drill is interfering with cutting edge detection – typically gold or black drills Refer to page 51
- False diameter was input or detected in manual mode
- Cutting edge is broken
- Cutting edge has shinny build up, such as aluminum
- Surface finish too rough
- Calibration of fiber optic sensor is incorrect and will need recalibrated
- Fiber optic lens is loose
- Fiber optic sensor needs replaced
- Fiber optic lens needs cleaned or replaced
- Fiber optic cable has been damaged
- Shank is larger than body of drill and correct diameter has not been manually input. Example: Step drill

Symptom

Auto diameter detect will not detect correct diameter

Cause

- Diameter detection rod is bent
- Diameter detection rod has been improperly installed. Refer to page 43
- Incorrect diameter calibration
- Shank of drill may be larger/smaller than actually body of drill
- Drill flutes are worn or damaged
- MTO #1 button excessively worn

Symptom

Auto web detection does not display correct web thickness

Cause

- Fiber optic sensor lens is dirty. Refer to page 67
- Fiber optic sensor is not calibrated correctly
- Fiber optic sensor is bad
- Old software installed

Symptom

Cutting edge is not positioned correctly at 12 o'clock /vertical

Cause

- Chip on cutting edge
- Burr on cutting edge
- The fiber optic sensor has detected the split line as cutting edge
- Drill has a hook in the cutting edge – use the Advance Screen to compensate. Refer to page 35
- Changing from extreme point angles. Example: Converting a 180° drill into a 118° point angle
- Material build up on cutting edge
- A value left in the Advance Screen

Symptom

Drill incorrectly split

Cause

- Check offsets on the split point offset. Page. Refer to page 27
- Wheel calibration is off
- Check wheel edge offset on wheel offset page. Refer to page 26
- Did not align correctly

Symptom

Material take off varies

Cause

- Check wheel face offset on wheel offset page. Refer to page 26
- Wheel calibration is off
- Spindle cartridge loose

Symptom

Drill incorrectly positioned in the honing process

Cause

- Check offsets on the Hone offset page. Refer to page 29
- Honing brush calibration is off

Symptom

Drill stops in front of the grinding wheel and will not continue into the sharpening cycle

Cause

- Grinding wheel is not rotating – check fuses
- Machine has hung up – power down machine and restart

Symptom

Length of time drill is in the grind becomes excessive

Cause

- Material take off too excessive
- Grinding wheel needs cleaned. Refer to page 49
- Grinding wheel needs replaced. Refer to page 50
- GMC # is too sensitive, decrease GMC #.
- Grind material selection has been changed from HSS to CARBIDE

Symptom

Unable to secure drill in or release drill from chuck

Cause

- Chuck lock not releasing. Refer to Section 24
- Chuck spindle insert needs cleaned. Refer to page 43
- Drill is carbide and needs to be centered while closing the chuck
- Large drill diameter
- Drill has multiple diameters that are interfering with jaws
- Drill has a taper in the shank or on the body of the drill

Symptom

During initialization chuck tries to rotate unsuccessfully while making a ratcheting/clicking noise

Cause

- Solenoid has malfunctioned and chuck-locking pin will not retract. Refer to Section 24
- Solenoid fuse blown
- Driver chip blown
- Drive pulley loose

Symptom

- **Unexplained motion**

Cause

- Machine temperature is too cold/hot - do not operate until machine temperature reaches 7°C (45°F) but not more than 32° C (90° F)
- Software issues – restore settings from permanent memory. Refer to page 25
- Download new software. Refer to page 37
- Loss of calibration – Call Darex Corporation
- Machine has moved outside of the limit switches
- Bad limit sensor

Identifying and checking LED and limit switches

Identification of LED sensors refer to page 77

1. MTO 2
2. MTO 1
3. Rotate
4. Swing
5. X Feed
6. In Feed
7. Align
8. -5V
9. +5V
10. X Axis board
11. Z Axis board
12. A Axis board
13. C Axis board

Trouble Shooting Vacuum

Symptom

Excessive grinding dust visible

Cause

- Vacuum not operational
- Dirty filter
- Hoses split
- Hoses not connected
- Filter top box or bottom not seated properly

Symptom

Vacuum not operational

Cause

- Blown fuse
- Not plugged into sharpener
- Bad control circuit on power supply
- Vacuum motor burned out

Trouble Shooting Software Download

Symptom

Transfer error

Cause

- Software loader doesn't like directory name or location
- Software loader doesn't support operating system

Solution

- Place Sloader files and folders directly off of root drive in a directory called Darex
- Call tech support for a newer Sloader program
- Download a newer Sloader program from the Darex web site
- Try a different computer with a different operating system

Symptom

General System error – Error Initializing Serial Port

Cause

- Serial port conflict

Solution

- Move cable to another available serial port
- Close program using current serial port (Hot Sync is a typical culprit)

Symptom

Download doesn't work

Cause

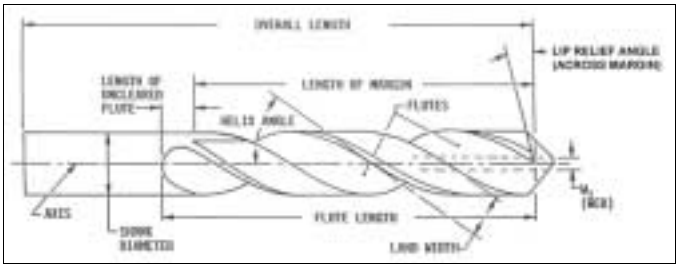
- Communication between computer and sharpener not working

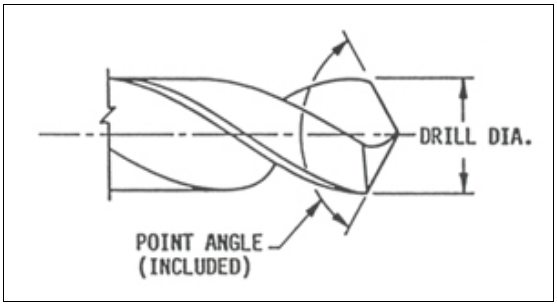
Solution

- Choose a different serial port
- Replace cable between computer and sharpener
- Use a regular serial cable instead of null modem cable

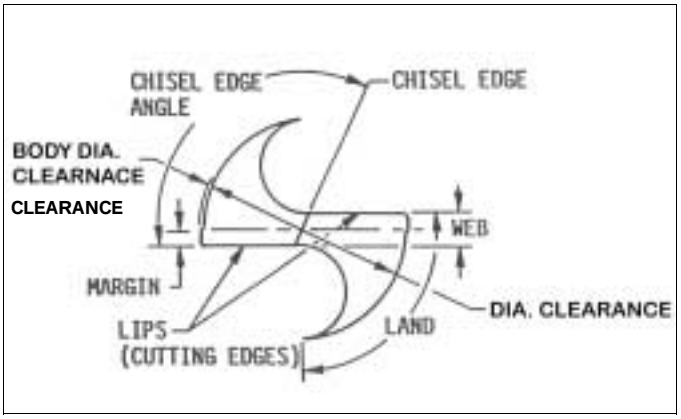
DRILL NOMENCLATURE

FACET & CONIC DRILL STYLE PICTURE AND NOMENCLATURE

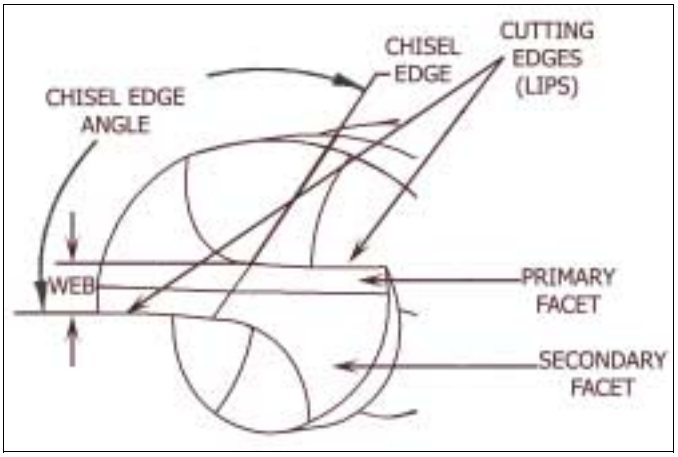




CONIC DRILL

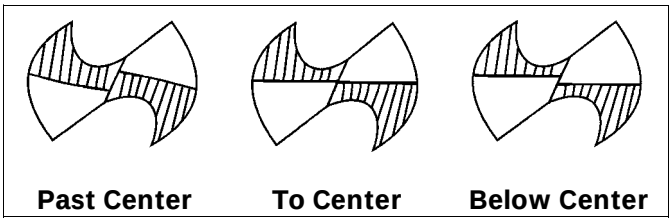


FACET DRILL

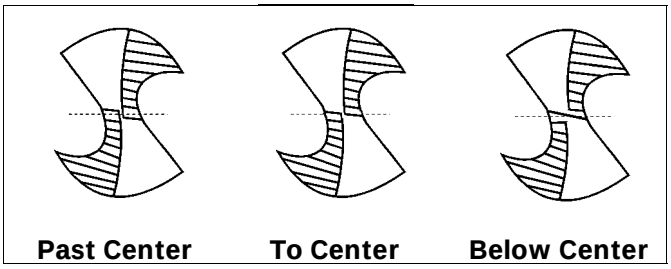


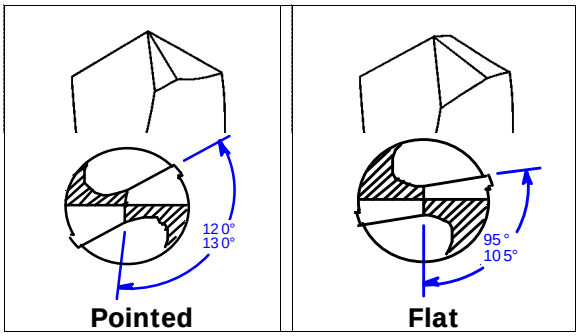
POINT SPLIT & RELIEF DIAGRAMS

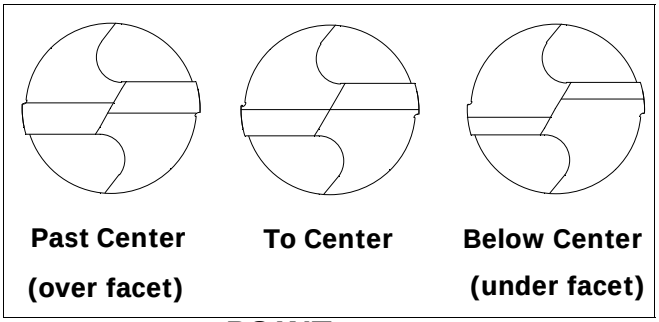
DEPTH OF SPLIT DIAGRAM



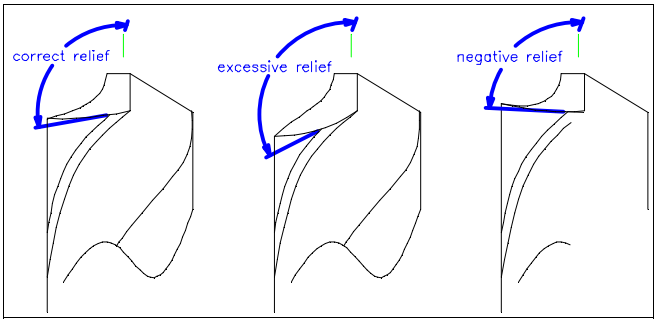
CENTER OF SPLIT DIAGRAM







POINT SPLIT ANGLE DIAGRAM



Sample Drill File Form

POINT ANGLE: _____
MT O: _____
DIAMETER DETECT:
AUTO _____
MANUAL _____
WEB DETECT:
AUTO _____
MANUAL _____
HONE: _____
POINT STYLE: _____
SPLIT STYLE: _____
R-SPLIT OFFSET: _____
A AXIS _____
DEGREE OF ADVANCE: _____
RELIEF: _____
DRILL MATERIAL: _____

POINT ANGLE: _____
MT O: _____
DIAMETER DETECT:
AUTO _____
MANUAL _____
WEB DETECT:
AUTO _____
MANUAL _____
HONE: _____
POINT STYLE: _____
SPLIT STYLE: _____
R-SPLIT OFFSET: _____
A AXIS _____
DEGREE OF ADVANCE: _____
RELIEF: _____
DRILL MATERIAL: _____

POINT ANGLE: _____
MT O: _____
DIAMETER DETECT:
AUTO _____
MANUAL _____
WEB DETECT:
AUTO _____
MANUAL _____
HONE: _____
POINT STYLE: _____
SPLIT STYLE: _____
R-SPLIT OFFSET: _____
A AXIS _____
DEGREE OF ADVANCE: _____
RELIEF: _____
DRILL MATERIAL: _____

POINT ANGLE: _____
MT O: _____
DIAMETER DETECT:
AUTO _____
MANUAL _____
WEB DETECT:
AUTO _____
MANUAL _____
HONE: _____
POINT STYLE: _____
SPLIT STYLE: _____
R-SPLIT OFFSET: _____
A AXIS _____
DEGREE OF ADVANCE: _____
RELIEF: _____
DRILL MATERIAL: _____

Drill Style Recommender

HSS, Standard Helix, 135-degree split point

- Cast Iron - Soft and Medium
- Stainless steel

HSS, Parabolic Flute design, 135-degree split point **– Effective in deep hole drilling of depths 4 times the diameter of the drill.**

- Aluminum alloys
- Low to Medium Tensile Strength materials

HSS, High Helix 118-degree point **– Engineered with a high helix angle and wide flute for improved chip ejection. High helix drills are often used on materials that form chips that tend to weld together and resist being carried up the flutes. Specially designed for drilling deep holes.**

- Aluminum
- Aluminum alloys
- Aluminum magnesium
- Aluminum bronze
- Zinc
- Low Tensile Soft Steels

HSS, Low Helix 118-degree point **– Engineered with a low helix angle and wide flute to reduce grabbing on entrance and breakthrough and to promote better chip ejection.**

- Free Machining Brass
- Plastics
- Shallow holes in Aluminum
- High Tensile Bronze

HSS, Standard Helix, 118-degree point

- Bronze Soft and Medium
- Copper
- Copper alloys
- Carbon Steel Low and Medium Alloyed

Cobalt HHS, Jobber length, 135-degree split point **– These drills are heat resistant and used for drilling tough, high tensile strength materials.**

- PH stainless steel
- Titanium
- Inconel
- High temperature alloys - Cobalt base - Iron base - Nickel Base
- Carbon Steel - low and medium alloyed

Cobalt HSS, Jobber length, wide land Parabolic flute design, 135-degree split point **– The wide land parabolic design provides superior performance in a greater range of materials and applications. Especially effective in deep-hole drilling of depths 4 times the diameter of the drill. Flute form produces closer tolerances due to improved chip flow. 135-degree split point reduces thrust.**

- High Alloy Steels
- Titanium
- Inconel
- PH stainless

Carbide-tipped, Standard Helix, Jobber and Taper length 118-degree point **– Features heavy-duty construction and heat-treated body for optimum wear resistance and support of the carbide tip. Taper length is particularly advantageous when length longer than a jobber length is required.**

- Hard Cast Iron
- Non-ferrous metals
- Composites

***Not recommended for drilling Steel**

GENERAL MAINTENANCE

To extend the life of your sharpener, we recommend a routine maintenance program be put in place. Every 200-machine hours is suggested, or more often if necessary.

Vacuum system:

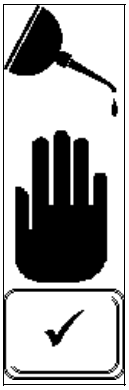
Check filter on a regular basis.
Inspect all hoses for cuts or tears. Do not use machine if hoses are damaged.

- Unplug vacuum from power source.
- Using a ¼ hex key wrench remove bolt and washer.
- Wearing protective gloves, remove top ½ cover of vacuum canister, remove filter cartridge. Appropriately dispose of used filter.
- Unthread plastic nut retaining bottom ½ of vacuum canister, remove bottom ½ of vacuum canister.
- Clean out residual grinding dust from bottom of canister.
- Replace with new filter cartridge.

NOTE: When reassembling, make sure the rim of the top ½ of vacuum canister is seated into gasket channel on bottom ½ of vacuum canister.

Lube cycle:

Oil Lubrication Screen



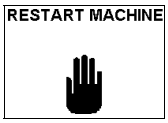
After 250 sharpening cycles, the "OIL LUBRICATION" screen will come up and your machine will need to go through the self-lubing process.

- Remove drill from chuck.
- Touch the "CHECK" Icon . This will begin the self-lubing cycle. Keep hands free from machine, as it goes into the lubing process, the X, Z and A axis will begin to move. The lube cycle will last 45 seconds. Upon completion, the lubing screen will disappear and the original screen will return.

Do not interrupt or stop machine once the lubing cycle has begun. If cycle is interrupted when the machine has moved beyond the limit switches, it will become lost. If this occurs, call Darex, 800-547-0222.

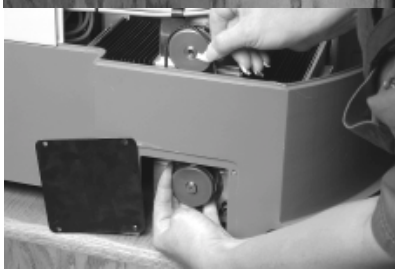
Grinding motor belt change:

- Touch the "BELT CHANGE" Button on the Tools, Offset & Maintenance screen. The X axis will move into position. The machine will go into an *on hold* mode and the motors will shut down.
- Once the "RESTART" screen has come up on the screen, you can proceed.



- For safety, power down machine and unplug AC power from machine.
- To remove the inspection plate located at the back of the machine, use a 2.5mm hex key wrench to remove the 4; 3mm BHS.

- Belt and pulley will now be exposed. Using a 3/16 hex key wrench, loosen the 4; ¼-20 SHCS bolts located on the motor mount extrusion, enough to slide the motor/pulley assembly to the right, allowing the belt to slip off.



- After replacing belt and before tightening up the 4; ¼-20 SHCS bolts, allow the weight of the motor to tension the belt.
- Once the motor/pulley is secure, replace inspection plate and screws.
- After changing or adjusting the belt, you must power down the machine using the On/Off switch.
- Restart and run Self Test Initialization program. Refer to page 19

Wheel cleaning:

Always clean a brand new wheel before using. Wheels are packaged in rust preventative oil and will load up if not cleaned before grinding.

These wheels are maintenance free from truing and dressing but will need cleaned periodically.

- Remove the wheel from the unit.
- Saturate the wheel with any type of oil-less solvent, such as Automotive Brake Cleaner.
- Use a soft bristle brush and lightly brush the saturated wheel loosening the impacted grinding particles.
- Re-saturate the wheel to flush out any loosened debris.

NOTE: If after cleaning the wheel, the drills still discolor or burn, the wheel life may be exhausted and the wheel will need replaced. Refer to page 49 for wheel change instructions.

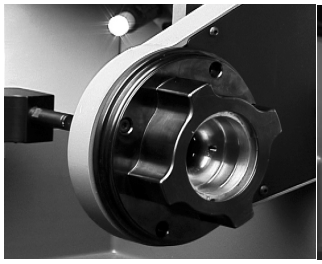
After a wheel change, verify and/or recalibrate Material Take Off (MTO):

1. Use a 3/8 HSS standard twist drill, measure the length of drill before sharpening.
2. Call up the Darex #1 file and sharpen a drill.
3. After sharpening the drill, measure the drills new length. MTO should be approximately .005-.007.
4. If incorrect, adjust using **Grinding Wheel Adjustment Screen Selector** Refer to page 26

Chuck cleaning:

Push the emergency stop button, unplug unit from power supply and use a “LOCK OUT” “TAG OUT” procedure.

- Open chuck jaw assembly to its largest capacity range. Use a 3mm hex key wrench to remove the 4; 4mm Allen head cap screws from the chuck knob.



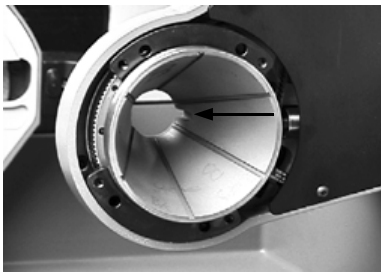
- The chuck jaw assembly can now be removed through the back of the chuck spindle assembly.

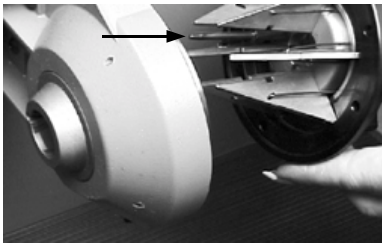
- Brush away any grinding residue.

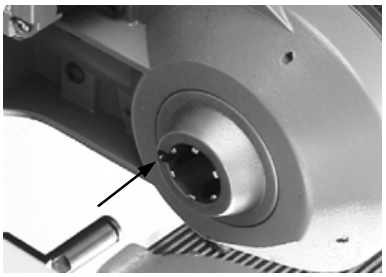
DO NOT REMOVE JAWS FROM SPRINGS OR SPRINGS FROM SPINDLE INSERT. JAWS ARE POSITIONED AND THEN GROUND TO MATCH THE SPINDLE CONE HOUSING. BY REMOVING, YOU MAY COMPROMISE THE PRECISION OF THE CHUCK!

TO REINSTALL:

- Reinstall in reverse order, making sure the diameter detect rod is oriented in spindle correctly.



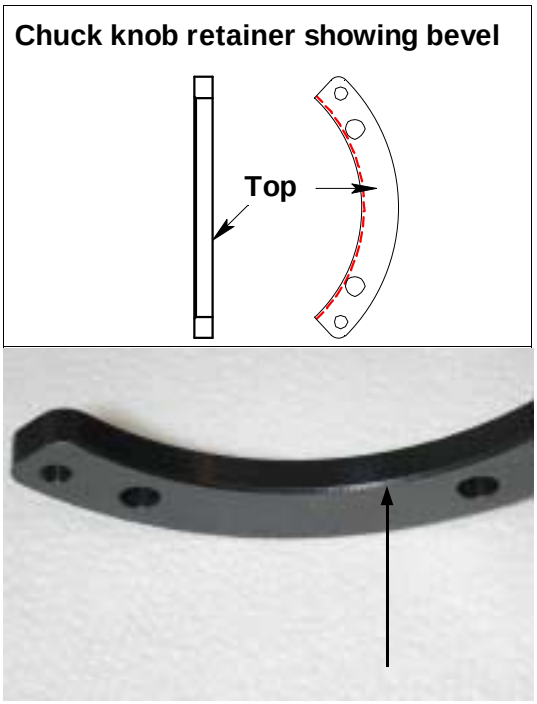




If diameter detector rod is reinstalled improperly, damage to rod will occur.

- After chuck jaw assembly is properly replaced and before the 4mm bolts are in place, open or close the chuck knob until the bolt hole pat-

tern on the chuck knob is in alignment with the bolt hole pattern on each of the chuck knob retainers. Make sure the chamfer on the retainers is facing toward the chuck knob.



NOTE: The position of the chuck knob retainers may need to be rotated to meet the bolt hole pattern on the chuck knob. Carefully insert bolts and tighten.

Changing the Grind Motor & Vacuum Fuses:

Unplug AC power. Located on the back of the machine, on the electrical box panel, you will find both sets of fuses. Fuse holder is spring loaded. Using a flat head screwdriver push in and turn counterclockwise until fuse holder backs out enough to hold on to, turn and remove. It's a good idea to check continuity of new fuse before replacing.

Cleaning Fiber Optic Lens:

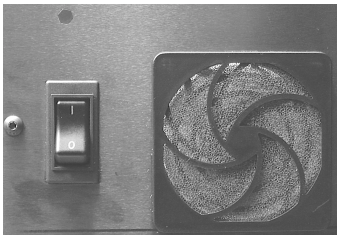
For good drill alignment function, keep the fiber optic lens clean. Normal service period is about every 14 days, depending on conditions, more often may be necessary. To service, lightly dust off lens with a **soft** bristled brush. Make sure lens is not loose.

Material Take Off (MTO) Sensors 1 & 2:

Using a soft bristle brush, lightly brush debris away.

Electronics Panel Fan Filter:

Turn the power off and remove the fan guard and filter. Clean the filter with soap and warm water and then blow dry. Reinstall filter and guard.



LCD Screen:

Clean LCD screen with a soft dry cloth

Wheel Housing Cavity:

While grinding wheel is out of machine and before replacing wheel, vacuum out wheel housing and wipe off and around the hub area.

Removing and Replacing Grind Motor Brushes:

1. Refer to removing and replacing grind motor assembly to remove and replace the motor. Refer to Section 24
2. Once the motor is removed, note the slotted brush retaining screws on each side of the motor.
3. Unscrew and check brushes one at a time noting how they were oriented in the guide. Marking them is a good idea.
4. Check each brush for damage to the springs or for excessive wear. They should measure no less than .275 inches from the lowest point of the radius to the top of the brush.
5. If either one needs replacement you must replace both brushes with new ones. If not, carefully replace them the same way they came out.

6. If you are replacing with new brushes, be sure to install them with the radius of the brush in line with the rotation of the motor.
7. After brushes are installed Refer to Section 24 Removing and Replacing Grind Motor Assembly Instructions to replace the motor.

Removing Chuck Spindle Drive Belt:

1. Remove Chuck Jaw Assembly Refer to Section 24
2. **Do not remove the jaws or springs from the assembly.** They are ground in position for accuracy and are not to be removed.
   Now rotate the crescent shaped knob retainers and remove.
3. To loosen and remove belt, insert a flat blade screw driver in the slotted bearing screw.
4. On the back of the casting is a 4mm button head screw that locks the bearing in place. Loosen with a 2.5mm Allen wrench. Rotate the bearing screw counterclockwise and loosen the belt. Slip the belt off the sprockets and remove.
5. Replace the belt. Using two fingers on a flat blade screw driver, rotate slotted bearing screw clockwise until belt just pulls to a flat condition. There will be a noticeable increase in resistance past this point of rotation. Continue rotating another 1/16". Hold screw driver in this position and secure bearing lock screw.

External Machine Castings:

Wipe down external machine castings with a mild household cleaner.

Internal Machine Castings:

- Carefully vacuum and inspect the internal cavities of the machine.
- Check baffles for tears.

TO ACCESS MODULAR COMPONENTS INSIDE SHARPENER:

To Remove Guard Door:

1. Remove PP12026TF - Guard Door Retaining Knob.
2. To clear base casting lip, lift door up and then off.

To Remove Left Side Top Cover:

1. Using a 5mm hex wrench, remove the 3; 1.25 x 18 Allen head bolts on the top cover.
2. Lift top cover off.

To Open Right Side Top Cover:

1. Using a 5mm hex wrench, remove 1; 1.25 x 18 Allen head bolt on the top cover.
2. Top cover is hinged at the front and cannot be totally removed. Lift from the back. Gently lift cover up until it touches the hard stop and is vertical. The top cover will stand open in this position.

CNC-XPS-16 PARTS LIST

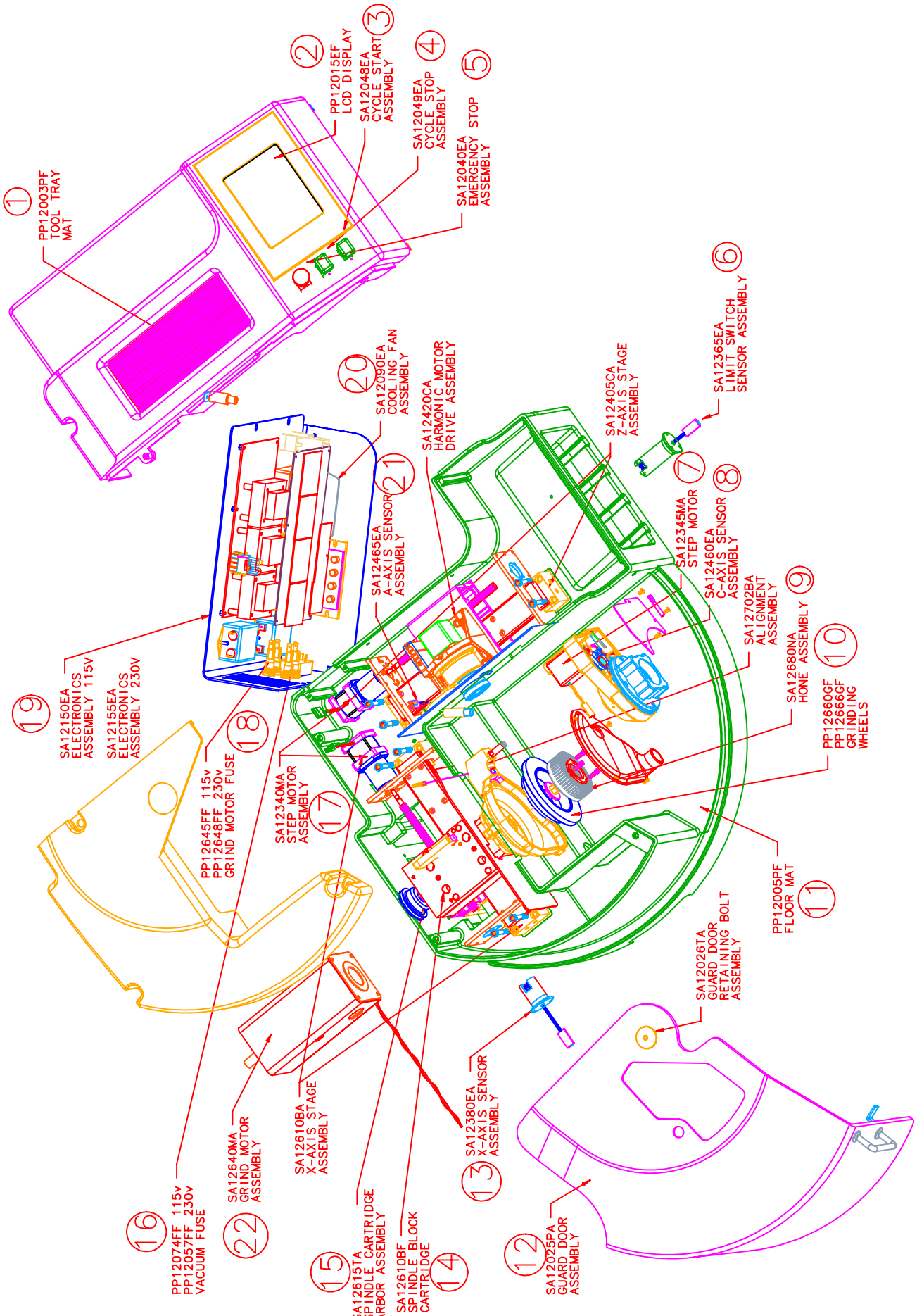
1 - PP12003PF - Tool Tray Mat
2 - PP12015EF - LCD Display
3 - SA12048EA - Cycle Start Button Assembly
4 - SA12049EA - Cycle Stop Button Assembly
5 - SA12040EA - Emergency Stop Button Assembly
6 - SA12365EA - Limit Switch Sensor Assembly
7 - SA12345MA - Step Motor Assembly Complete
8 - SA12460EA - C Axis Sensor Assembly
9 - SA12680NA - Hone Assembly (Brush, Retainer & Bolts)
Not Shown - PP12680NF - 180 Grit Hone Brush
Not Shown - PP12686NF - 120 Grit Hone Brush
Not Shown - SA12252FA - Brush Retainer & Bolts 3 ea.
10 - PP12660GF - 150 Grit CBN Wheel (Standard)
10 - PP12666GF - 220 Grit Diamond Wheel (Standard)
10 - PP12663GF - 260 Grit Diamond Wheel (Optional)
10 - PP12675GF - 320 Grit Diamond Wheel (Optional)
Not Shown - PP12750BF - Spindle Lock Pin
Not Shown - PP12670TF - Wheel Retainer Bolt

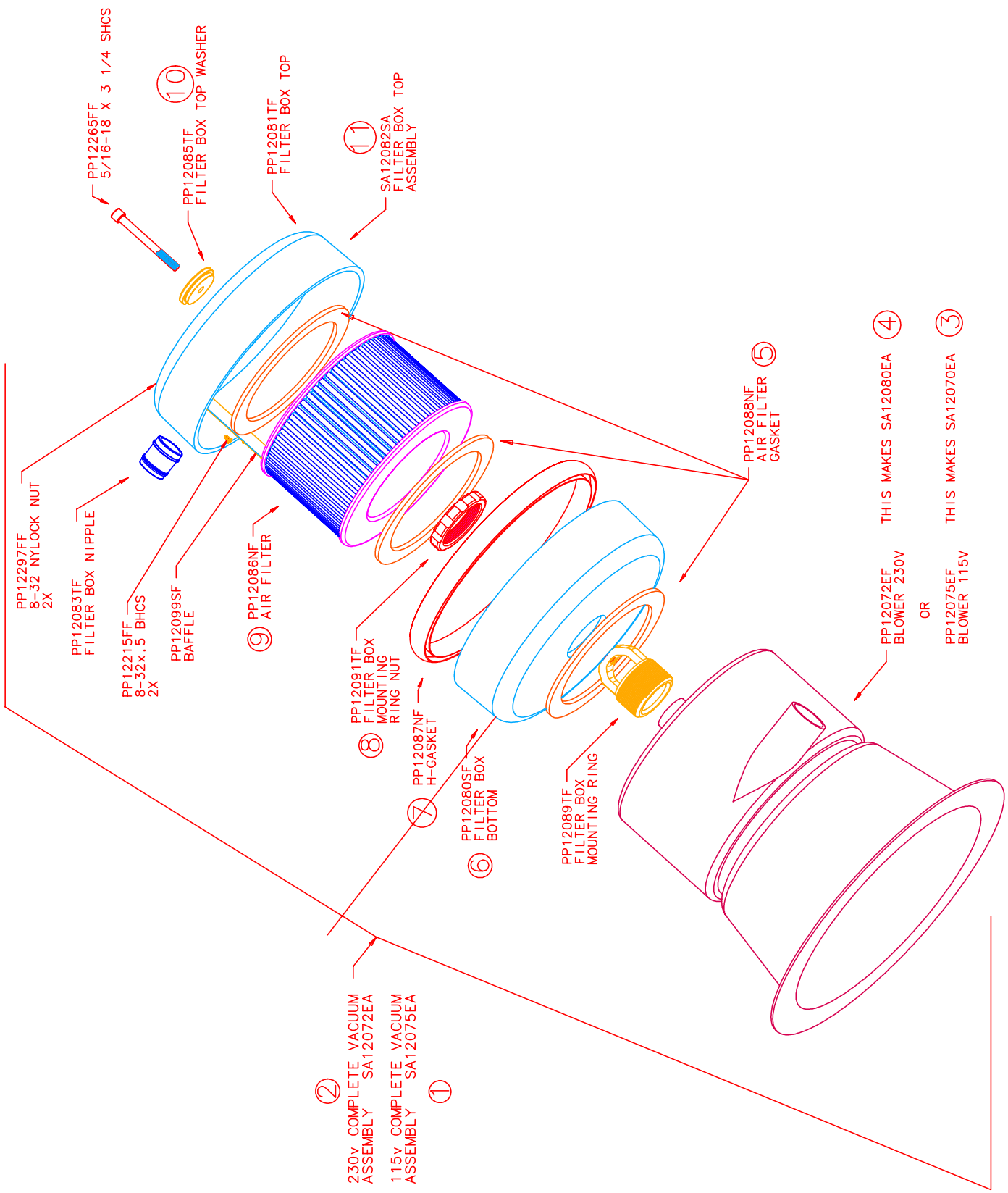
11 - PP12005PF - Floor Mat
12 - SA12025PA - Guard Door Assembly
13 - SA12380EA - X Axis Sensor Assembly
14 - PP12610BF - Spindle Cartridge Block
15 - SA12615TA - Spindle Cartridge Arbor Assembly
Not Shown - PP12050EA - Guard Door Interlocking Switch
Not Shown - PP12026TF - Guard Door Retaining Knob

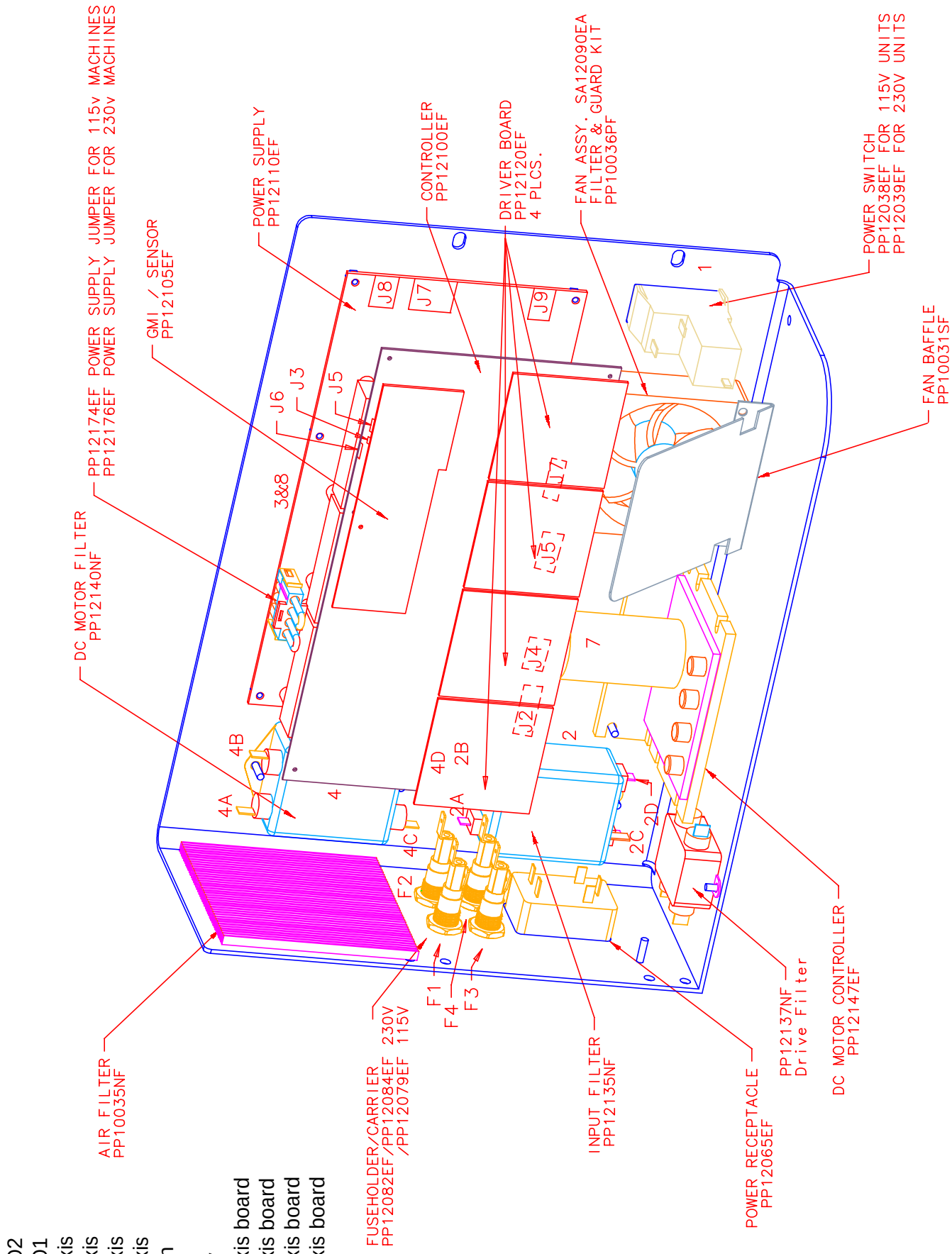
MISC
Not Shown - PP10144EF - 115v Cord Set
Not Shown - PP10148EF - 230v Cord Set
Not Shown - PP12027EF - 6V lamp (Clear)
Not Shown - PP12830NF - Machine Cover
Not Shown - PP12850KF - Manual
Not Shown - PP12860NF - Software Diskette
Not Shown - PP04896VF - Video
Not Shown - SA12800KA - 115v Tool Kit
Not Shown - SA12805KA - 230v Tool Kit
Revised 02/05/03

16 - PP12074FF - 115v - 7A-250v SLO Fuse (Vacuum)
16 - PP12057FF - 230v - 1.6A-250v SLO Fuse (Vacuum)
17 - SA12340MA - Step Motor w/ Coupling
18 - PP12645FF - 115v-3A - 250v SLO Fuse (Grind Motor)
18 - PP12648FF - 230v-3.15A - 250v SLO Fuse (Grind Motor)
19 - SA12150EA - 115v Electrical Panel Complete
19 - SA12155EA - 230v Electrical Panel Complete
20 - SA12090EA - Cooling Fan
Not Shown - PP10035NF - Cooling Fan Filter
21 - SA12465EA - A Axis Sensor Assembly - Harmonic Dr.
22 - SA12640MA - Grind Motor Assembly
Not Shown - PP12655LF - Grind Motor Belt
Not Shown - SA12638NA - Brushes
Not Shown - PP12138NF - D.C. Motor Choke
Not Shown - PP12565TF - Diameter Detect Rod
Not Shown - PP12582 LF - Drive Belt
Not Shown - PP12580LF - Nema Drive Gear
Not Shown - SA12517TA - Belt Idler Assembly
Not Shown - SA12595EA - Solenoid Assembly Complete
Not Shown - PP12038EF - 115v Power Switch
Not Shown - PP12039EF - 230v Power Switch

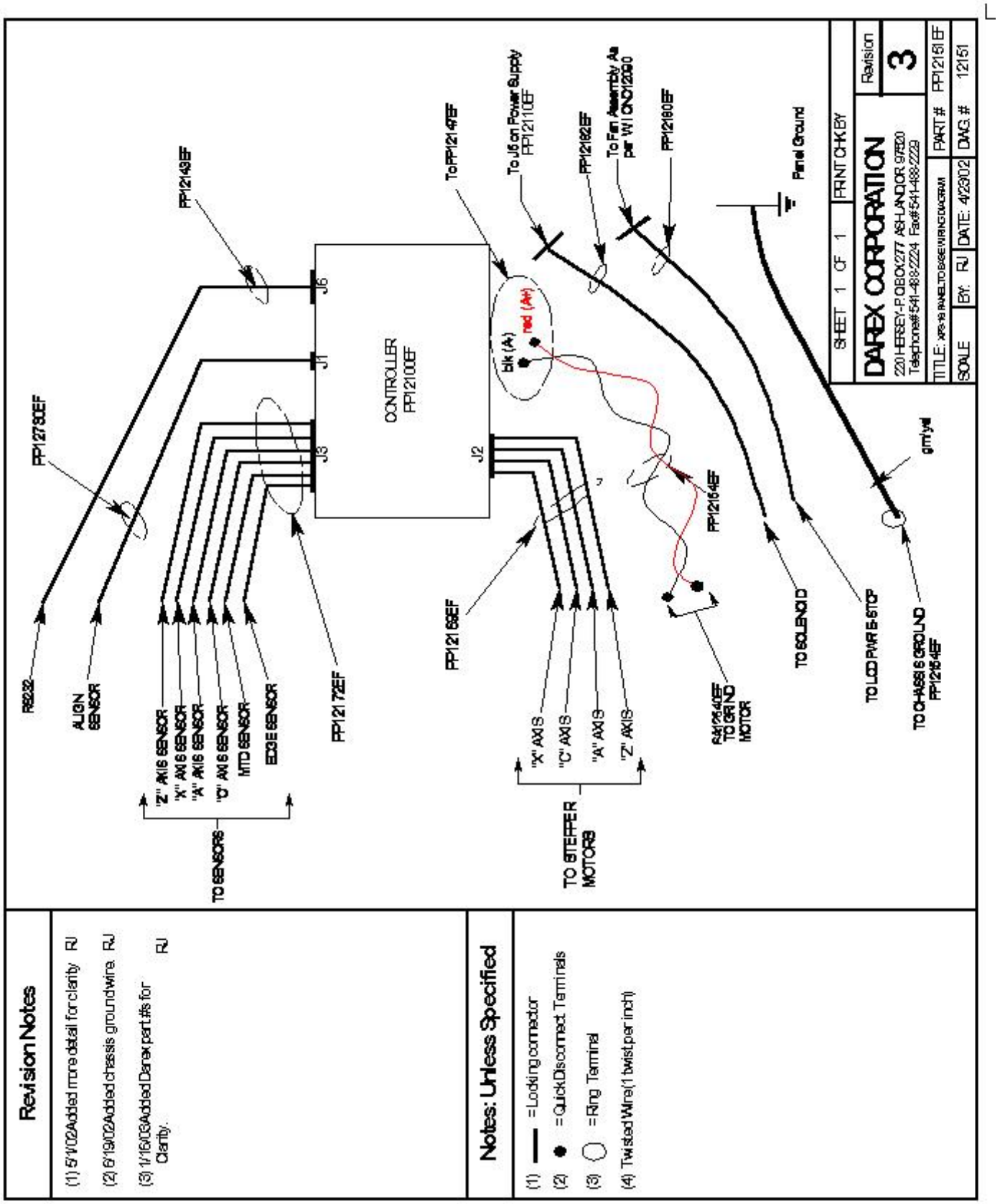
CNC VACUUM EXPLODED VIEW PAGE 72
1 - SA12075EA - 115v CNC Vacuum Complete
2 - SA12072EA - 230v CNC Vacuum Complete
3 - SA12070EA - 115v Vacuum Blower /Plug
4 - SA12080EA - 230v Vacuum Blower /Plug
5 - PP12088NF - Air Filter Gasket
6 - PP12080NF - Filter Box Bottom
7 - PP12087NF - H-Gasket
8 - PP12091TF - Filter Box Mounting Ring Nut
9 - PP12086NF - Filter
10 - PP12085TF - Filter Box Top Washer
11 - SA12082SA - Filter Box Top Assembly
Not Shown - PP12077LF - Intermittent Hose (wheel Guard)
Not Shown - PP12097PF - Siphon Hose
Not Shown - PP02705PF - Vacuum Hose

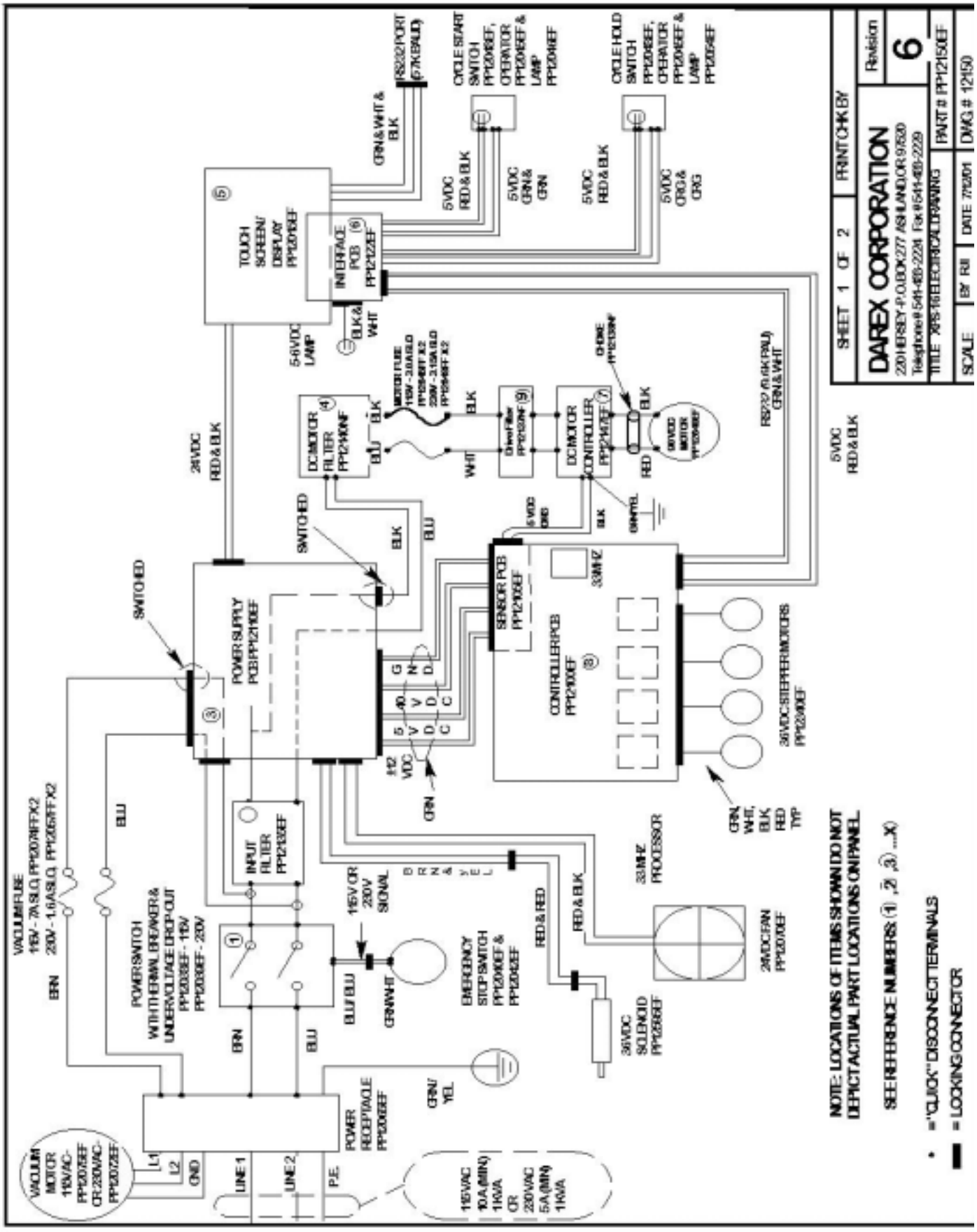

1 PP12003PF TOOL TRAY MAT
2 PP12015EF LCD DISPLAY
3 SA12048EA CYCLE START ASSEMBLY
4 SA12049EA CYCLE STOP ASSEMBLY
5 SA12040EA EMERGENCY STOP ASSEMBLY
6 SA12365EA LIMIT SWITCH SENSOR ASSEMBLY
7 SA12405CA Z-AXIS STAGE ASSEMBLY
8 SA12345MA STEP MOTOR
9 SA12460EA C-AXIS SENSOR ASSEMBLY
10 SA12702BA ALIGNMENT ASSEMBLY
SA12680NA HONE ASSEMBLY
PP12660GF PP12666GF GRINDING WHEELS
11 PP12005PF FLOOR MAT
SA12026TA GUARD DOOR RETAINING BOLT ASSEMBLY
12 SA12025PA GUARD DOOR ASSEMBLY
13 SA12380EA X-AXIS SENSOR ASSEMBLY
14 SA12610BF SPINDLE BLOCK CARTRIDGE
15 SA12615TA SPINDLE CARTRIDGE ARBOR ASSEMBLY
16 PP12074FF 115v PP12057FF 230v VACUUM FUSE
22 SA12640MA GRIND MOTOR ASSEMBLY
SA12610BA X-AXIS STAGE ASSEMBLY
17 SA12340MA STEP MOTOR ASSEMBLY
18 PP12645FF 115v PP12648FF 230v GRIND MOTOR FUSE
19 SA12150EA ELECTRONICS ASSEMBLY 115V
SA12155EA ELECTRONICS ASSEMBLY 230V
20 SA12090EA COOLING FAN ASSEMBLY
21 SA12465EA A-AXIS SENSOR ASSEMBLY
SA12420CA HARMONIC MOTOR DRIVE ASSEMBLY


PP12265FF
5/16-18 X 3 1/4 SHCS
10
PP12085TF
FILTER BOX TOP WASHER
PP12081TF
FILTER BOX TOP
11
SA12082SA
FILTER BOX TOP
ASSEMBLY
PP12297FF
8-32 NYLOCK NUT
2X
PP12083TF
FILTER BOX NIPPLE
PP12215FF
8-32x.5 BHCS
2X
PP12099SF
BAFFLE
9
PP12086NF
AIR FILTER
PP12088NF
AIR FILTER
GASKET
5
4
THIS MAKES SA12080EA
3
THIS MAKES SA12070EA
PP12072EF
BLOWER 230V
OR
PP12075EF
BLOWER 115V
8
PP12091TF
FILTER BOX
MOUNTING
RING NUT
7
PP12087NF
H-GASKET
6
PP12080SF
FILTER BOX
BOTTOM
PP12089TF
FILTER BOX
MOUNTING RING
2
230v COMPLETE VACUUM
ASSEMBLY SA12072EA
115v COMPLETE VACUUM
ASSEMBLY SA12075EA
1



- MTO2
- MTO1
- C Axis
- A Axis
- X Axis
- Z Axis
- Align
- -5V
- +5V
- X Axis board
- Z Axis board
- A Axis board
- C Axis board


Revision Notes
(1) 5/1/02Added more detail for clarity RJ
(2) 6/19/02Added chassis ground wire RJ
(3) 1/16/03Added Darex part #s for Clarity. RJ
Notes: Unless Specified
(1) —— =Locking connector
(2) ● =Quick Disconnect Terminals
(3) ◯ =Ring Terminal
(4) Twisted Wire(1 twist per inch)
RS232
ALIGN SENSOR
PP12730EF
PP12143EF
"Z" AXIS SENSOR
"X" AXIS SENSOR
"A" AXIS SENSOR
"C" AXIS SENSOR
MTD SENSOR
EDGE SENSOR
TO SENSORS
PP12172EF
CONTROLLER PP12100EF
J6
J1
J3
J2
ToPP12147EF
To J5 on Power Supply PP12110EF
blk (A)
red (A+)
PP12168EF
"X" AXIS
"C" AXIS
"A" AXIS
"Z" AXIS
TO STEPPER MOTORS
PP12164EF
6at12640EF TO GRIND MOTOR
PP12182EF
To Fan Assembly As per WI CNC12090
PP12180EF
Panel Ground
TO SOLENOID
TO LOD PWR & STOP
TO CHASSIS GROUND PP12164EF
grn/yel
DAREX CORPORATION
220 HERSEY-P.O.BOX277 ASHLAND,OR 97520
Telephone#541-488-2224 Fax#541-488-2229
SHEET 1 OF 1
PRINT CHKBY
Revision
3
TITLE: XPS-10 PANEL TO BASE WIRING DIAGRAM
PART # PP12151EF
SCALE
BY: RJ
DATE: 4/23/02
DWG # 12151

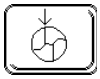

DAREX CORPORATION
2001 BRSBY-P.O.BOX 277 ASHLAND,OR 97520
Telephone # 541-488-2228 Fax # 541-488-2229
SHEET 1 OF 2
PRINT CHK BY
Revision
6
TITLE XPS-16 ELECTRICAL DIAGRAM
PART # PP12150EF
SCALE
BY RH
DATE 7/12/01
DWG # 12150
TOUCH SCREEN/ DISPLAY PP2056EF
INTERFACE PCB (6) PP2122EF
RS232 PORT (57K BAUD)
CYCLE START SWITCH PP2045EF, OPERATOR PP2046EF & LAMP PP2044EF
CYCLE HOLD SWITCH PP2045EF, OPERATOR PP2046EF & LAMP PP2056EF
5VDC GRN & WHT & BLK
5VDC RED & BLK
5VDC GRN & GRN
5VDC RED & BLK
5VDC ORG & ORG
5-6VDC LAMP
BLK & WHT
24VDC RED & BLK
DC MOTOR FILTER PP2140NF
DC MOTOR CONTROLLER PP2140EF (7)
MOTOR FUSE 115V - 3.0A SLO PP2068FX2 230V - 2.5A SLO PP2069FX2
DRIVE PP2139NF
DRIVE PP2139NF
DC MOTOR PP2068EF
BLK
WHT
RED
BLU
SWITCHED
POWER SUPPLY PCB PP2210EF (3)
SENSOR PCB PP2100EF
CONTROLLER PCB PP2100EF (8)
33MHZ
5VDC RED & BLK
RS232 (GRN & WHT)
36VDC STEPPER MOTORS PP2200EF
12 VDC
GRN
GRN, WHT, BLK RED TYP
33MHZ PROCESSOR
24VDC FAN PP2070EF
RED & BLK
RED & RED
36VDC SOLENOID PP2066EF
EMERGENCY STOP SWITCH PP2060EF & PP2062EF
BRN & YELL
115V OR 230V SIGNAL
BLU/ BLU
GRN/WHT
BRN
BLU
GRN/ YEL
VACUUM FUSE 115V - 7A SLO PP2074FX2 230V - 1.6A SLO PP2054FX2
BRN
BLU
POWER SWITCH WITH THERMAL BREAKER & UNDER VOLTAGE DROP-OUT PP2038EF - 115V PP2039EF - 230V
INPUT FILTER PP2139EF
POWER RECEPTACLE PP2066EF
VACUUM MOTOR 115VAC- PP2075EF OR 230VAC- PP2076EF
L1
L2
GND
LINE 1
LINE 2
P.E.
115VAC 10A (MIN) 1KVA OR 230VAC 5A (MIN) 1KVA
NOTE: LOCATIONS OF ITEMS SHOWN DO NOT DEPICT ACTUAL PART LOCATIONS ON PANEL
SEE REFERENCE NUMBERS (1), (2), (3) ...X)
= "CLICK" DISCONNECT TERMINALS
= LOCKING CONNECTOR

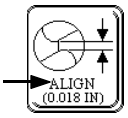
XPS-16 90° Software Upgrade

With this software upgrade you will now have all the great features of your original XPS-16 but will now have the ability to sharpen below the 118° point angle range. After the soft ware has been successfully installed in your XPS-16, your point angle range will increase. You can now sharpen drills from 90° - 150°. Please read through the accompanying operating manual. In addition to the increase point angle range, there are some added features you may not be aware of and /or will need to know to successfully sharpen 90° drill points.

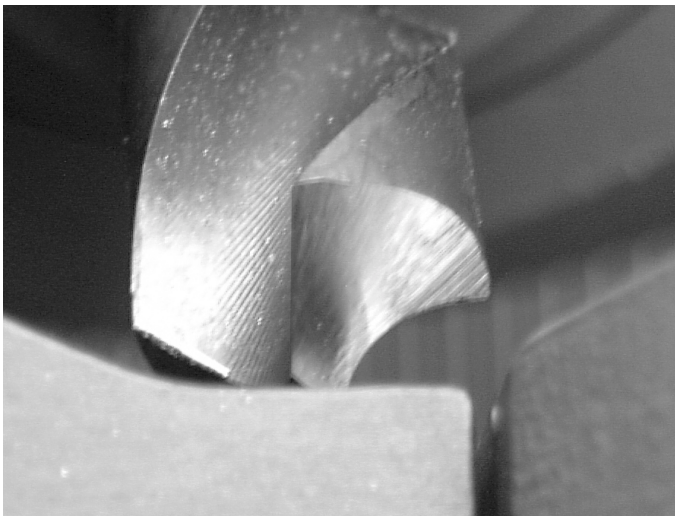
90° Sharpening Addendum

- Sharpening drills at 90°-117° can only be sharpened as a CONIC point style, the FACET point option is disabled.
- The Split option is disabled when sharpening drills at 90° - 117°.
- You now have the option to bypass the fiber optic sensor and align the drills cutting edge manually, see page 21 of the ops manual. When you choose a point angle of 90° - 117° your machine will default to manual alignment. This requires the operator to manually align the cutting edge vertically.





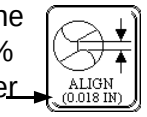
(12-o'clock)



When correctly aligned the chisel angle produced should be between 120° 130°.

- The diameter ranges is limited to 5mm – 16 mm. We do not recommend sharpening drills 3mm to 4mm in diameter. These drills are too small. Most of the time, the drill will miss the MTO2 sensor, triggering an alarm and causing the machine to stop in cycle and go home.
- You can choose the Honing option just as before. A new feature in this software package is a HONE ONLY option, see page 21 of the ops manual. When hone only has been chosen the grind and split options are disabled.

- The diameter detection can be used in Auto or in Manual as before.
- We recommend that you measure and enter the web thickness manually. You can use AUTO Web detection but the machine will then automatically calculate 15% of the detected diameter and register that number as the web thickness.



- You can select the lip relief amount just as before. The relief will vary depending on how accurate the operator aligns the cutting edge of the drill in the vertical position. Advancing and retarding of the cutting edge alignment will increase and decrease the chisel angle and relief respectively.